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Mission Statement

ZAPCO IS DEDICATED TO THE PURSUIT OF AUDIO FIDELITY.

Our passion, our “Driving Force” is to design and manufacture car audio products of unsurpassed quality, to provide unparalleled support and service for these products and to conduct business in a manner that will enhance the quality of life for all involved. There is absolutely no substitute for experience; that is a simple fact of life. Another simple fact is that for over 30 years, ZAPCO has been the leader in defining quality standards for the car audio industry. These years of experience have led to a thorough understanding of the challenges that are unique to the world of car audio. ZAPCO’s relentless quest for sonic purity consistently yields imaginative designs that utilize the most innovative technologies. The resulting products set the criteria by which all others in the industry are judged. Feel the passion, hear the quality, know the performance and reliability by making ZAPCO the “Driving Force” in your car audio system.

ZAPCO
The Reference Digital Series

The Reference series (originally called AG) marked ZAPCO's first effort to bring the high quality that built the ZAPCO legend to an amplifier line that everyone could afford. The response has exceeded the company's wildest expectations. Why has the line been received so well? We think the answer is simple. The Reference Series amplifiers sound as good as, or better than, other brand's best amplifiers. This is possible because we took a very different approach in the design of our Reference Series.

Rather than follow the crowd and build a less expensive amplifier around cheaper components, ZAPCO chose to develop a more efficient way to build the best, high voltage, amp on the market. The Reference Series was modeled after the Studio Series including the same circuit design, Op-Amps, Gate Drive Boost circuit, 1% metal film resistors and high current, Bi-Polar outputs devices. One major improvement was the addition of SymbiLink™ balanced line inputs.

Did we make any sacrifices to achieve this new Series? Certainly, and these fall in two areas. First, we gave up a certain amount of headroom. In the Studio Series, every model was overbuilt by 100%. The Studio amplifiers had twice as many output devices as it needed to run full power on all day long. The Reference Series amplifiers have only 1½ times the output devices required. We still overbuild the Reference Series by 50%, just not as much as the Studio. This is a difference that will almost never be heard. The other sacrifice we made was in size. The Studio 500, for example was probably the world's smallest, 900-watt (only 19"L x 5.75"W), class A/B amplifier. The Reference DC1100.1 is 23"L x 7.5"W, which is more in line with what people might expect from that much power. While the smaller size can be more convenient, it took much more time to build.

So, we have a slightly larger product but we can bring a much better price to a product that offers vastly superior performance and reliability.

Digital Reference

Now ZAPCO takes the Reference Series to a whole new level. For the basic install, Digital Reference amps are true plug and play devices. Just hook them up and play your music, to enjoy the world famous ZAPCO sound.

However, for the advanced installation, Digital Reference takes car audio to a level of control and performance never before available. Every amp in this series carries an on-board DSP capable of programming and controlling every aspect of performance needed to tune your system for perfect sound in your car regardless of the car model or your listening tastes.

ZAPCO's exclusive Digital Processing Network allows you to use a PC to do all amp programming or to use the optional DRC-SL In-Dash controller. All Amps in the network can be addressed individually and controlled from a single point (either the PC or the DRC-SL).

In addition, the Digital Reference amps have ZAPCO's advanced Ducted Flow Cooling systems to keep your amp running in the hottest of conditions without annoying fan noise.

If you don't want to worry about whether your speakers will work with your Digital Reference amp, no problem! ZAPCO's exclusive Intelligent Rail Voltage Control system (IRVC) makes sure your amp will work with any speaker load from 8 Ohms down to ½ Ohm.

See following section for complete description of all the Digital Reference's exclusive features.

Sonic Purity

Our dedication to sonic purity requires that the highest quality internal components are used.

- **Resistors**

All resistors (other than power resistors) are 1% precision low noise metal film. This is a key reason why ZAPCO products have the industries' best low noise specifications, and why you won't see as much fluctuation in our test certificates as you will with other brands. Precision resistors also reduce distortion and improve channel matching.

- **Capacitors**

Capacitors are similar to batteries. Like a battery, they store energy and have electrolyte (internal fluid). Also like a battery, a capacitor *can* have a very limited life. "Computer grade" capacitors for example, are reliable only in cool environments with very little current applied to them. Only the best high current and high temperature capacitors should be used in an auto-sound application. Although these capacitors typically cost five times as much as those commonly used in other brands, ZAPCO insists that no audio degradation will occur over time.

- **Transistors**

Two types of transistors are used in ZAPCO products, bipolar and MOSFET. MOSFET transistors are rugged, high current output devices that are best suited as switches. They are *the* choice for switching power supplies. They are however, very non-linear and are not suitable for use as audio outputs. They cannot be matched and their inherent distortion requires too much feedback to achieve reasonable distortion levels. Bipolar output transistors are used exclusively in the audio stage of all Reference Series amplifiers. The audio performance of a bipolar transistor heavily outweighs any minor advantages a MOSFET might offer regarding durability. We solve the durability concerns by simply using more output devices than the amplifier requires. This gives us a bulletproof amp with the sound quality we demand of a ZAPCO product.

- **Transformers**

Most of the transformers used in our products are hand-wound to ensure maximum quality. This provides a guarantee that current capability, efficiency, and radiated noise are all kept within our demanding parameters. Another critical aspect of the transformer is mounting; all transformers are securely mounted in their respective chassis. Transformers are massive, and if not securely mounted can cause failure among internal components due to vibration.

- **Power Supplies**

Regulated or Unregulated? For years amplifier designers have debated which type of power supply is best. What's the truth about power supplies? They each have advantages and disadvantages and there is no, one, best type. Limiting yourself to one type of power supply limits your amplifier design flexibility. ZAPCO uses both types of power supplies depending on the intended use of each amplifier, as well as expected current demands and operating environment.

SymbiLink™ Balanced System

The most natural configuration for an audio system in the automobile places the signal source in the dash with the amplifiers located some distance away, usually under the seat or in the trunk of the vehicle. The reality of this arrangement dictates the necessity to make long runs of low level signal cable usually from the front to the back of the car. The electrical environment in an automobile is one that is inherently noisy and filled with conditions that threaten to degrade signal fidelity at every turn. Capacitive loading due to the long cable lengths, the potential for ground loops, alternator charging currents or currents generated by the amplifiers themselves are all factors that induce noise and distortion into the signal cables. By no means is this an ideal situation. Thankfully, ZAPCO has found the solution.

SymbiLink™ components convert a standard unbalanced audio signal into the fully balanced domain usually reserved for expensive professional audio equipment found in recording studios or at your local concert venue. After this conversion is made, the audio cabling becomes virtually immune to electrical interference in the surrounding environment and is much less susceptible to signal degradation over long cable runs. It is for this reason that balanced signal cables are common in professional or industrial applications. ZAPCO has made this technology available for your car. ZAPCO engineers also discovered that the pulsating D.C. current in the automobile chassis and amplifier power wiring caused a significant amount of low frequency distortion. ZAPCO's balanced SymbiLink™ technology completely eliminates this distortion.

Specifications You Can Hear

Our dedication to sonic purity, and to the concept of cumulative error demands that we design and build our amplifiers and processors to be the cleanest in the industry. ZAPCO amplifiers are the standard by which all other amplifiers are measured. However, it concerns us when one specification THD (Total Harmonic Distortion) that can't be heard in most modern, high-end amplifiers becomes the only meaningful specification manufacturers seem to publish. THD is only one of a number of specifications that make ZAPCO amplifiers sound better than other brands. Of the four primary specifications, it is probably the least obvious in normal use.

Damping Factor:

The most common misconception about ZAPCO amplifiers is that we drastically under-rate our power output. Not true, it just sounds that way. Today's music, of all genres, has a great deal of bass content. Damping describes the amps ability to control a woofer. An amp with poor damping will leave bass notes sounding soft and undefined, regardless of its power. In most amp lines, the largest units have damping factors between 100 and 200. Since rock solid bass is perceived as a function of power, our 100-watt amp sounds like other brands 300-watt amps.

Slew Rate:

A similar situation exists in the higher frequencies. Ever turn up the volume and hear cymbals sounding like fingernails on a blackboard? That's because the amplifier simply wasn't fast enough to accurately reproduce the high frequency tonality of the cymbals. A higher slew rate means a faster amplifier, which means crystal clear high frequency reproduction. ZAPCO amps have the highest slew rates in the industry. Once again, clear defined, sound is perceived as a function of power.

Signal to Noise Ratio:

Noise is an ever-present problem in auto sound reproduction. ZAPCO approaches this problem in two ways. The first is at the input source. All Reference amplifiers can use the SymbiLink™ balance line inputs, which drastically reduce the noise coming into the amp. Secondly, ZAPCO amps are built with the highest quality, lowest noise components available. We have the highest signal to noise ratios in the industry. The extra money we spend on better components is directly rewarded with better sound.

Stereo Separation:

The ability of an amplifier to maintain the separation between the right and left channels is what allows an amplifier to reproduce an accurate sound stage. Music is recorded with each instrument in its own location on a sound stage. You should hear it the same way in your vehicle.

Results:

To assure that no ZAPCO product ever fails to meet our level of expectation, we must build all products to exceed our specifications by a comfortable margin. Our superior design and construction give our amplifiers advantages that go beyond power output and provide a sound quality difference you will hear the moment you turn your system on.

A WORD ABOUT "WEIGHTED" SPECIFICATIONS

Most of the time, when you see specifications, they will be preceded by the term "A" weighted. "A" weighting is a way of coloring numbers to make specifications look better.

About the only place you can find specs that aren't "A" weighted is in ZAPCO manuals and literature. We publish only "raw" specs at ZAPCO. If we don't like the specifications of one of our products we'll make it better, not try to make the numbers look better.

Warnings

ZAPCO highly recommends that a fuse or circuit breaker be placed within 18" of the battery. Although products have adequate internal protection, it is possible that a pinched power wire between the component and the battery may result in a fire. The protection device should be placed where it can be accessed easily and all wiring should be routed safely and correctly according to the following guidelines:

Do not run wiring close to hot or spinning objects.

Always use wire grommets when routing wire through the firewall or any other metal panels.

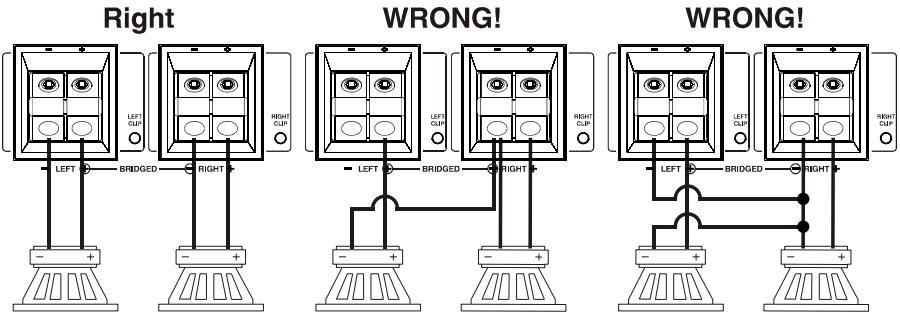
Make sure that the potential for pinched wiring is avoided by routing all wires away from moving hinges and seats. This also includes brake, gas and clutch pedals, hood and trunk hinges, etc.

Caution:

Continuous exposure to excessive sound pressure levels may cause permanent hearing loss. ZAPCO strongly advises that you use common sense when setting volume levels. If you experience ringing in the ears, it could cause permanent hearing damage!

CAUTION!

When connecting our amplifiers to pre-wired stock speakers, care must be taken that there are no common connections between left and right speaker wires, i.e. minus to minus or plus to plus connections, as this will cause the amplifier to go into immediate protection or may cause damage to the amplifier. Output connections are not common chassis ground. Please follow the hookup instructions in this owner's manual. Any questions should be directed to your local ZAPCO dealer or call us at 209-577-4268.



Wire Size

Most people understand the importance of a clean signal source for good sound reproduction. But, what about your 12 volt power source? It's often surprising how many people (even professional car audio people) will obsess about signal wire but routinely provide the amplifier only a fraction of the current it needs to do its job. The most common wire gauge used in car audio is 10-gauge. The most common location for amplifiers is in the trunk.

Take a look at the chart below. If you want to have any respectable amount of power for your amp, you need an 8-gauge wire to the trunk as a **bare minimum.** If you want enough power to drive woofers, you're going to need at least a 4-gauge wire to the rear.

	Length of Run							
	0-	**4 -**	**7 -**	**10 -**	**13 -**	**16 -**	**19 -**	**22 -**
Current Demand	**4 Ft**	**7 Ft**	**10 Ft**	**13 Ft**	**16 Ft**	**19 Ft**	**22 Ft**	**28 Ft**
0 - 20 amps	14	12	12	10	10	8	8	8
20 - 35 amps	12	10	8	8	6	6	6	4
35 - 50 amps	10	8	8	6	6	4	4	4
50 - 60 amps	8	8	6	4	4	4	4	2
65 - 85 amps	6	6	4	4	2	2	2	0
85 - 105 amps	6	6	4	2	2	2	2	0
105 - 125 amps	4	4	4	2	2	0	0	0
125 - 150 amps	2	2	2	2	0	0	0	0

Lets look at a fairly small system. If you use a Reference 200.2 (25 amps) for the highs and a Reference 350.2 (40 amps) for the woofers, you need at least a 4-gauge wire to provide 65 amps at the trunk. Anything less and your car won't go boom. It'll just go Blap!

It takes lots of current to make lots of power!

And remember! An electrical circuit is just that…a circuit. For current to travel, you must complete the circuit from the positive terminal to the negative terminal. Whatever you use for power (B+) you must also use for Ground (B-). 4-gauge power wire…4-gauge ground wire!

So! Use this supplied chart! Add up the fuse values on the amplifier(s) then choose the proper size wire based on the distance from the car battery to the amplifier location. Very important, always use the same gauge wire for the main ground as you do for the main power. Always make your ground as short as possible and attach to a clean solid grounded surface.

Installation Guidelines

Mounting your Reference Digital Amplifier is easy. Keep in mind the following guidelines:

- The amplifier may be mounted in any direction, on wood, metal or carpet.
- The metal case of the amplifier may be grounded or left isolated.
- The amplifier requires adequate ventilation. Position the amplifier with sufficient surrounding area for proper cooling.
- Keep fan and vent endplates clear for proper internal cooling.
- Keep the amplifier out of the engine compartment and other locations that may cause excessive heat or moisture.
    - **Do not mount the amplifier to a subwoofer enclosure or any other place that may have excessive vibration!**

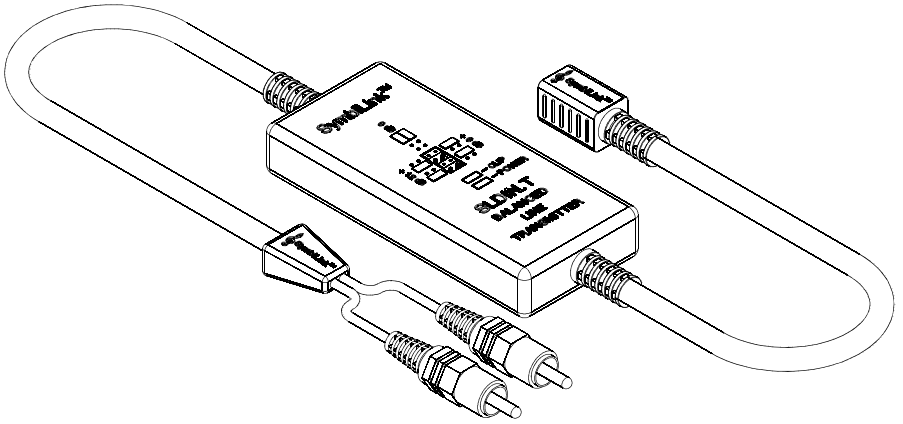
In – Line SymbiLink™ Transmitters

ZAPCO was the first Car Audio manufacturer to embrace balanced line signal transmission. There is a good deal of information in this manual that explains the how and why of SymbiLink™ balanced line technology.

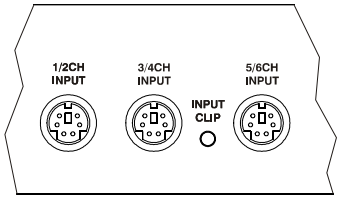
While Pro-Audio and High-End Home Audio manufacturers have adopted balanced line technology, the car audio market is still supporting the outdated RCA cable system. If SymbiLink™ is substituted with RCA cables the potential built into our products will go unrealized by many users.

To ensure that every ZAPCO Reference Series amplifier can realize its full potential we provide an SLDIN-T.F Balanced Line Transmitter with every amplifier. Built into this transmitter is also a line driver capable of boosting signal input up to 12dB (4-times) the output voltage of the source. This balanced line conversion will improve noise rejection, lower the inherent system noise floor, reduce distortion, and provide up to 16 volts of signal output.

Simply attach the SymbiLink™ cable to the transmitter in the length that fits your system and enjoy the sonic purity of SymbiLink™ Balanced Technology.



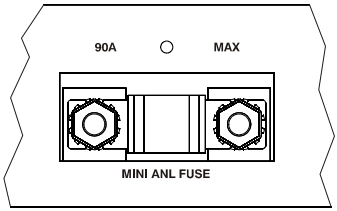
Reference Digital Series Inputs



Just like the C2K Competition Series, ZAPCO's Digital Reference Series amplifiers accept only SymbiLink™ Balanced Line inputs. This assures that the amplifier will receive the cleanest and strongest signal possible. Every Reference Digital amplifier is equipped with an SLDIN.T-F SymbiLink™ transmitter for each input pair.

Pictured below is the input section of the DC650.6 6Ch amplifier. Note that Placed with the input section is an input clip indicator. This LED will illuminate when any input signal becomes large enough to clip the input stage of the amp. Using this input clip indicator in conjunction with each channel's output clip indicator allows you to easily get the maximum performance from your Digital Reference amplifier.

Reference Digital Fuses

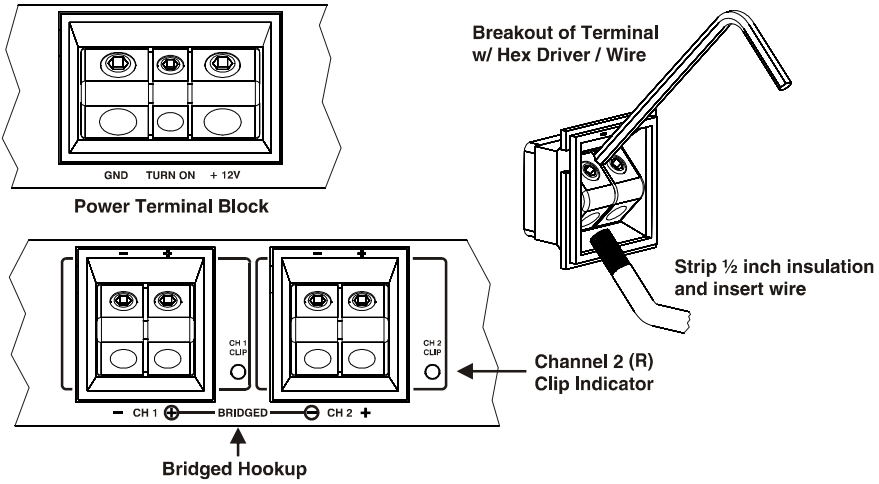


The Reference Digital amplifies are designed to operate under a wide variety of conditions and they are designed to protect themselves from misuse. They operate at any impedance from 8 Ohms down to ½ Ohm. This means the amp must operate with greatly varying current demands. We want these amps to have all the current they need at any time to do the job right.

So if the amp protects itself, why use a fuse? That's there to protect your car. A fuse is not something you should have to replace periodically. We use high current, heavy duty, Mini ANL fuses on the Reference Digital series. This fuse will never fail in normal use or even extreme use, and we recommend that if your fuse blows you see your authorized Zapco dealer immediately, to determine the cause of the failure.

Wire Connections for the Digital Reference

The Digital Reference amps use ZAPCO's new flush set, insulated terminal blocks. The stripped wire is inserted in the lower portion of the block at an angle, then use a Hex driver (Allen key) in the upper portion to tighten the connection.



Speaker Terminal Block

Note that each speaker has its own block on the Digital Reference. The bridged connection is between the left positive on the left block and the right negative on the right block.

To make tuning and gain setting easier, each output channel has a clip indicator located at that channel's speaker terminal. When these channel clip lights are used in conjunction with the input clip light, every amp can be adjusted for ideal gain.

Channel designations for 2, 4, and 6 Ch. Amplifiers are as below:

Channel 1: Left front
Channel 2: Right front
Channel 3: Left rear
Channel 4: Right rear
Channel 5: Left sub / center
Channel 6: Right sub / center

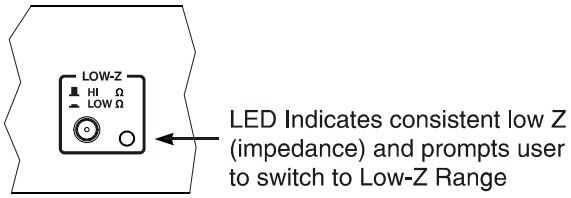
Intelligent Rail Voltage Control

High current or low current? How can you have one amp do it all? With conventional designs you can't. As impedance goes down, the amount of current needed goes up and the required voltage goes down. So, with most 4 Ohm amps, if you hook up too low a speaker load, the amp will pour so much current into it's components that it will simply burn itself up or go into protection. Others have sold amps to play a variety of loads, but they have used systems of Automatic Gain Control. They simply attenuate the input signal when impedance goes down. This tends to add distortion and it decreases efficiency.

Example: One company's 500 watt Class D amp plays at most any load, but it's efficiency is exactly the same as the ZAPCO 500 watt class A/B amplifier. The same is true of their 1000 watt D and ZAPCO's 1100 watt A/B. So, it plays most loads but it sacrifices the only advantage of Class D amps...efficiency. You sacrifice both sound quality and efficiency to be able to use any speaker.

Question: How do you get the advantage of a wide range of loads without sacrificing efficiency or adding distortion?

Answer: The new ZAPCO, Intelligent Rail Voltage Control system™ (IRVC).



ZAPCO's IRVC uses a discrete component circuit at the output stage which constantly monitors the current requirements of the amplifier stage. This circuit then adjusts the rail voltage so that the amplifier stage is always operating at peak efficiency. If the load is consistently below ideal, the circuit illuminates the Low-Z light. This prompts you to switch the entire unit into the "Low-Z" mode.

This Low-Z mode adjusts the power supply itself to maximize efficiency at the lowest impedances.

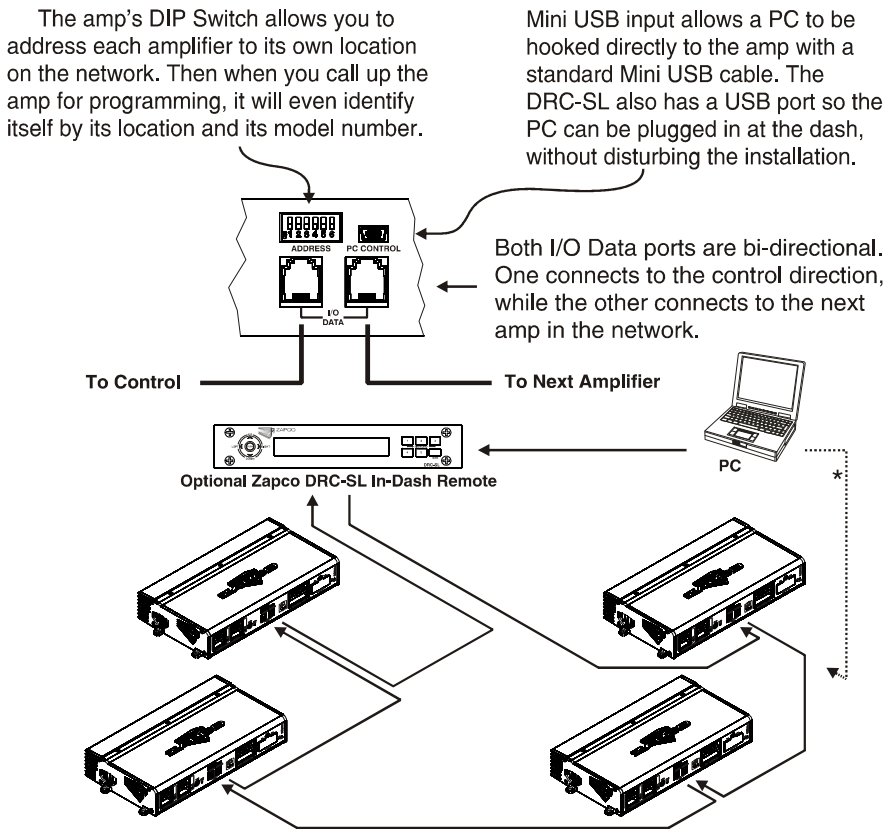
So here you have the best solution. ZAPCO's IRVC circuit lets you play virtually any speaker load, and still lets your amplifier stage operate at peak efficiency, with minimum distortion.

Wow! It's like more power **and** better mileage. You don't have to choose.

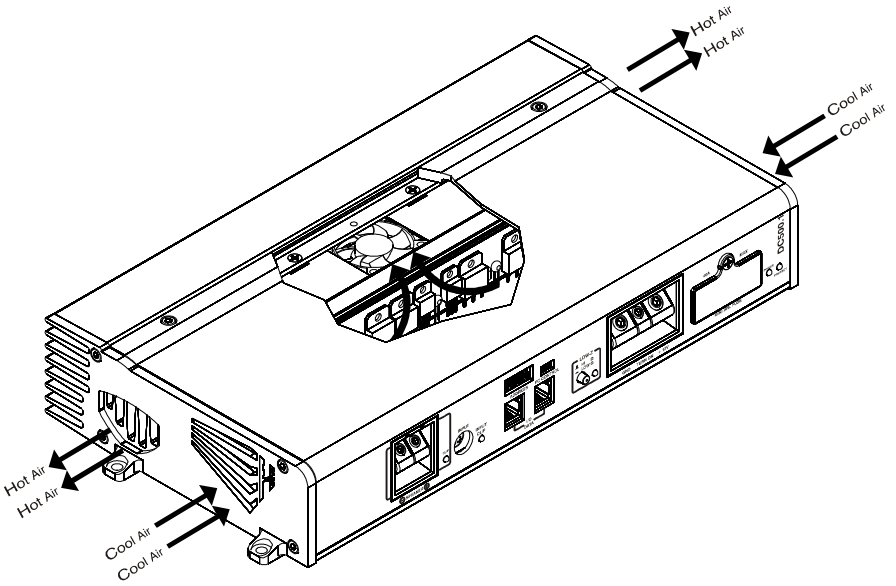
The ZAPCO Digital Programming Network

All Digital Reference amplifiers, and the ZAPCO DSP6-SL, stand-alone Digital Signal Processor incorporate ZAPCO's exclusive Digital Programming Network™ (DPN). This network allows the user to program all amp functions using a DRC-SL or a PC. The amps DSP can then be programmed to control Gain, Volume, Crossover, Q-Bass, Equalization, and even Time Delay. More importantly, the system allows you to network all amps in your system so you can control up to 16 amplifiers from a single DRC-SL or, with a PC from a single window.

While the DRC-SL provides functions never before available, its small size does limit the graphics of the network and it takes a while to make the settings through the menu system. To allow higher resolution graphics and to make the setting go much faster, we have also developed a program that lets you make all adjustments with a PC. Each Digital Control product has a USB interface. This allows you to plug a PC into any unit in the network and control the entire network.*****


The amp's DIP Switch allows you to address each amplifier to its own location on the network. Then when you call up the amp for programming, it will even identify itself by its location and its model number.
Mini USB input allows a PC to be hooked directly to the amp with a standard Mini USB cable. The DRC-SL also has a USB port so the PC can be plugged in at the dash, without disturbing the installation.
ADDRESS
PC CONTROL
I/O DATA
Both I/O Data ports are bi-directional. One connects to the control direction, while the other connects to the next amp in the network.
To Control
To Next Amplifier
PC
Optional Zapco DRC-SL In-Dash Remote
*

Ducted Flow Cooling



Here is an unfortunate fact: Generating power creates heat. As ZAPCO has learned to put more power into a smaller package, the management of thermal properties has become increasingly important.

The Reference Digital chassis has our new Ducted Flow Cooling. Cool air is brought into the chassis from the forward vents. The air travels over the components and is then forced down a duct flowing over the heat sink. The heated air is then exhausted through vents at the end of the heat sink.

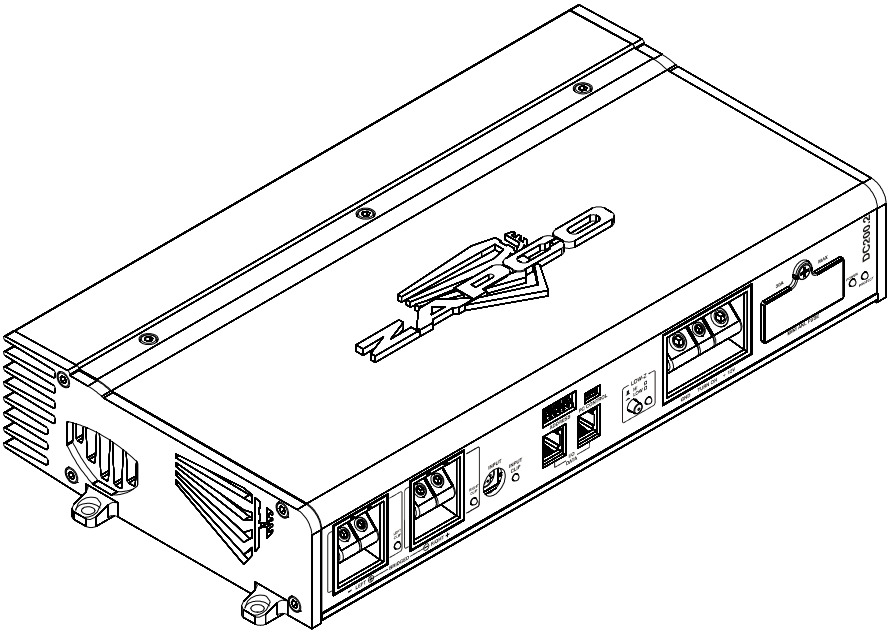
In the higher power units where cooling is a bigger problem a fan located over the sink increases air flow for more cooling.

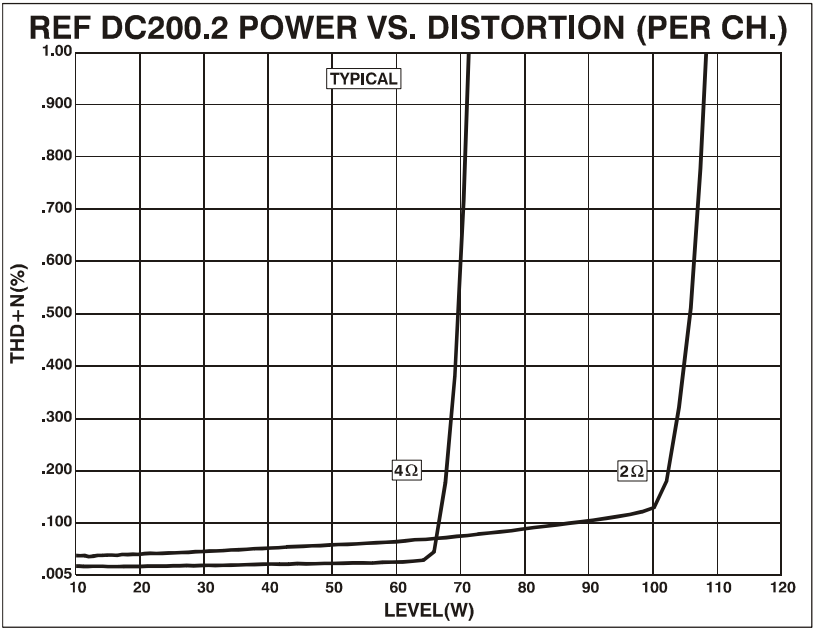
A problem which has plagued fan cooling for years is the noise of the fan. The fan itself generates a degree of mechanical noise and the air motion itself causes a degree of noise (like wind noise). The Ducted Flow system attacks both these problems.

First, the fan is mounted inside the amp, in the middle, so the amp itself acts as a muffler to keep mechanical noise trapped inside. Second, because the fan is not located near the vents we can eliminate the “wind noise” of pulling the air through the vents.

The result: The Ducted Flow chassis gives superior convection cooling without the usual fan noise. This means better sound and reliability.

Reference DC200.2





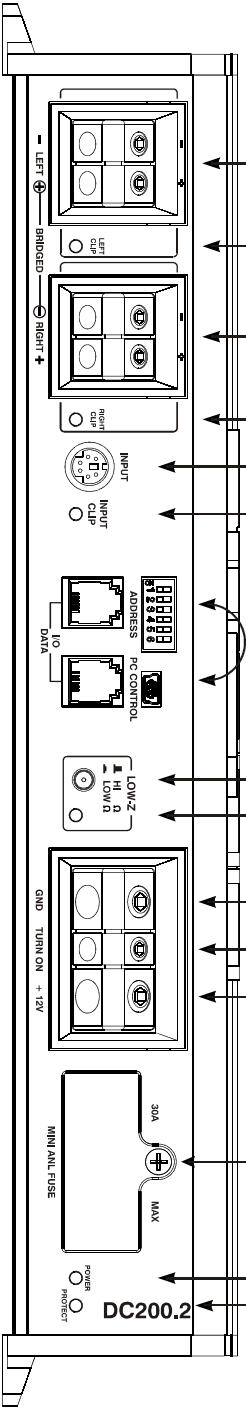
Key Features

- SymbiLink™ Balanced Inputs
- On-Board, Full Function DSP
- Intelligent Rail Voltage Control
- Plays from ½ ohm to 4 ohm Stereo Loads
- USB Input for PC Control
- Optional DRC-SL In-Dash Remote Control
- Optional Digital Programming Network
- Ducted Flow Cooling
- Heavy-Duty, High-Current, Insulated Terminal Blocks
- Space Saving Flush Wiring Connections
- Heavy-Duty Mini ANL Fuse
- Bridgeable
- Three-Channel Capable
- Gate Drive Boost Circuit
- High-Current Bipolar Outputs
- Optically Isolated MOSFET Power Supply
- Quality ZAPCO Construction

Reference DC200.2 Specifications

Total Power (14.4V @ 1kHz)	Power
Dynamic (4Ω mono)	230 watts
.2% T.H.D.	205 watts
Rated Power / Channel	T.H.D.+N
50 watts x 2 @ 4Ω	< .025%
100 watts x 2 @ 2Ω	< .14%
Bridged Mono	
134 watts x 1 @ 8Ω	.046% T.H.D.
205 watts x 1 @ 4Ω	.12% T.H.D.
Frequency Response	20 – 20kHz, ± .12dB
S/N Ratio	> 95dB
Transient Distortion (4Ω, 40W)	< .01%
Slew Rate	> 23 V/μS
Damping Factor	> 166 @ 4Ω
Input Sensitivity	
Balanced (DIN)	500mV – 10V
Separation	> 64dB
Max. Current Requirements	26 Amps @ 200 watts
Idle Current	.84 Amps
Dimensions	14.01”L x 7.12”W x 2.35”H

Front Panel Layout



Left Speaker Terminals

Left Ch. Clip Indicator

Right Speaker Terminals

Right Ch. Clip Indicator

SymbiLink Balanced Input

Input Clip Indicator

Zapco Digital Programming Network Ports
See page 17

Low Z Switch

Low Z Indicator

Chassis Ground: Connect the ground to the vehicles chassis near the amplifier.

Turn On +12V

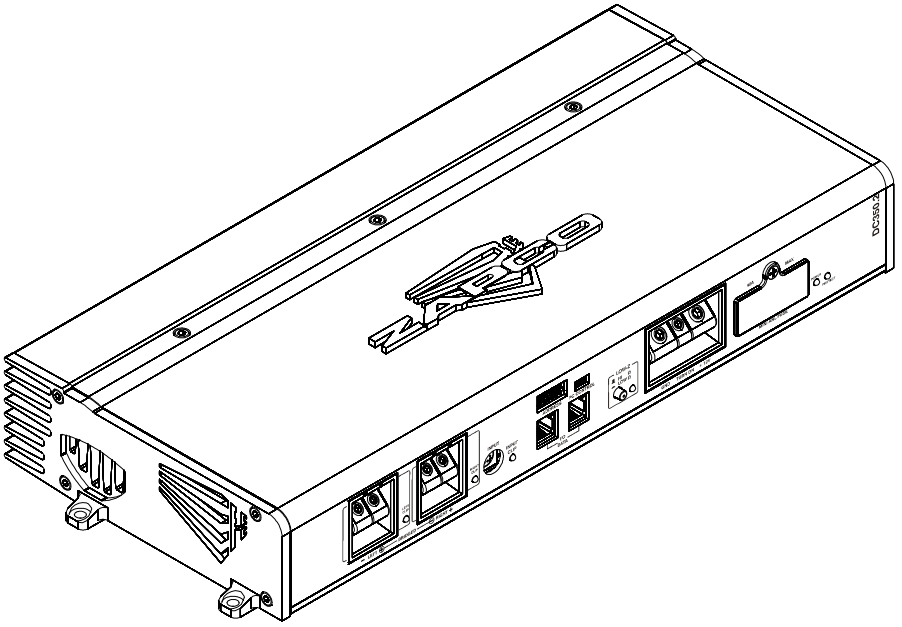
+12V Power: Connect heavy stranded wire to the 12 volt source.

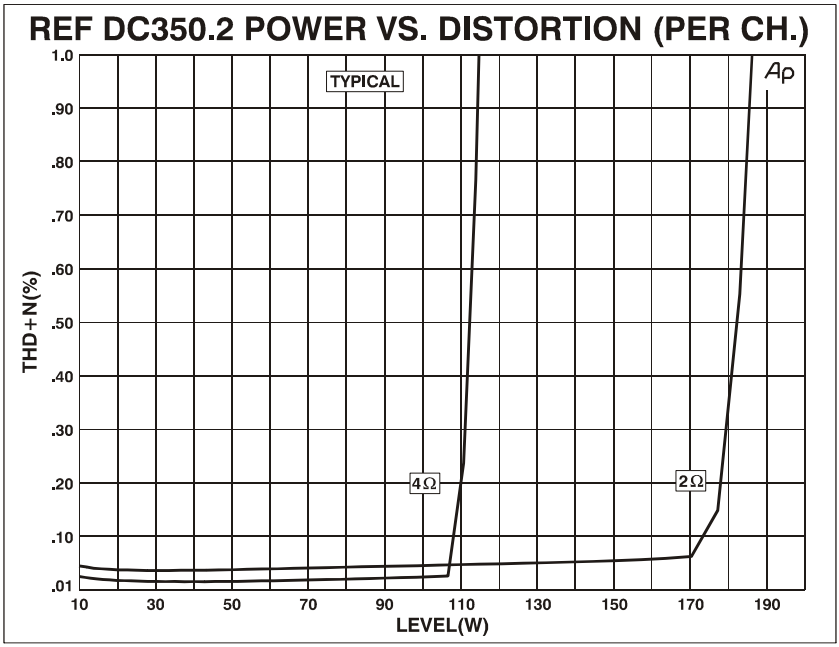
Mini ANL Fuse: Never replace fuse with a fuse greater than 30 amperes!

Power On Indicator

Protect Indicator

Reference DC350.2





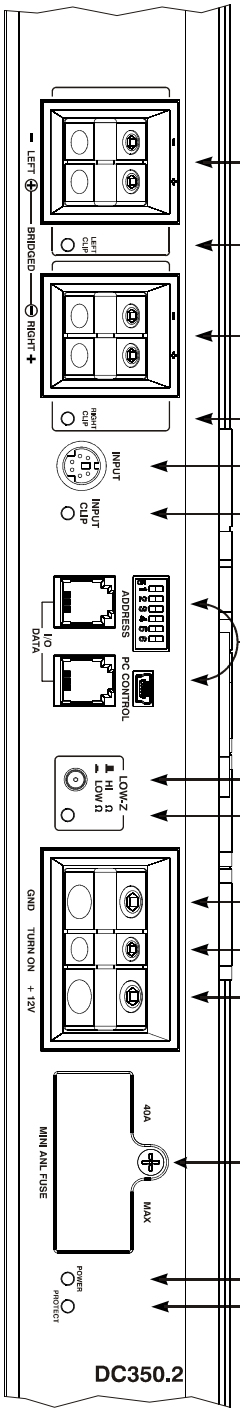
Key Features

- SymbiLink™ Balanced Inputs
- On-Board, Full Function DSP
- Intelligent Rail Voltage Control
- Plays from ½ ohm to 4 ohm Stereo Loads
- USB Input for PC Control
- Optional DRC-SL In-Dash Remote Control
- Optional Digital Programming Network
- Ducted Flow Cooling
- Heavy-Duty, High-Current, Insulated Terminal Blocks
- Space Saving Flush Wiring Connections
- Heavy-Duty Mini ANL Fuse
- Bridgeable
- Three-Channel Capable
- Gate Drive Boost Circuit
- High-Current Bipolar Outputs
- Optically Isolated MOSFET Power Supply
- Quality ZAPCO Construction

Reference DC350.2 Specifications

Total Power (14.4V @ 1kHz)	Power
Dynamic (4Ω mono)	380 watts
.2% T.H.D.	350 watts
Rated Power / Channel	T.H.D.+N
100 watts x 2 @ 4Ω	< .025%
170 watts x 2 @ 2Ω	< .047%
Bridged Mono	
210 watts x 1 @ 8Ω	.046% T.H.D.
330 watts x 1 @ 4Ω	.12% T.H.D.
Frequency Response	20 – 20kHz, ± .25dB
S/N Ratio	> 96dB
Transient Distortion (4Ω, 40W)	< .015%
Slew Rate	> 29 V/μS
Damping Factor	> 200 @ 4Ω
Input Sensitivity	
Balanced (DIN)	500mV – 10V
Separation	> 66dB
Max. Current Requirements	42 Amps @ 350 watts
Idle Current	.93 Amps
Dimensions	16.38”L x 7.12”W x 2.35”H

Front Panel Layout



Left Speaker Terminals

Left Ch. Clip Indicator

Right Speaker Terminals

Right Ch. Clip Indicator

SymbiLink Balanced Input

Input Clip Indicator

Zapco Digital Programming Network Ports
See page 17

Low Z Switch

Low Z Indicator

Chassis Ground: Connect the ground to the vehicles chassis near the amplifier.

Turn On +12V

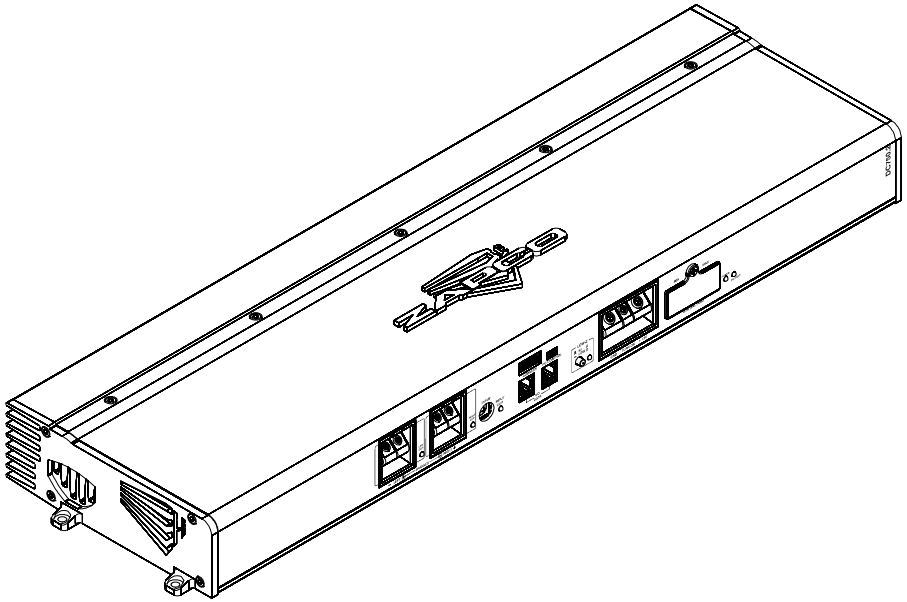
+12V Power: Connect heavy stranded wire to the 12 volt source.

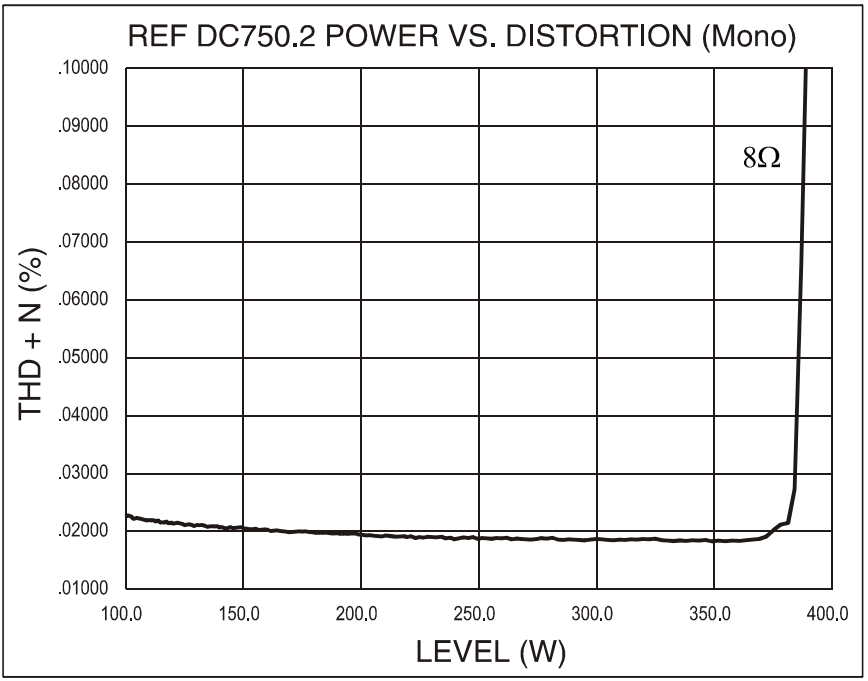
Mini ANL Fuse: Never replace fuse with a fuse greater than 40 amperes!

Power On Indicator

Protect Indicator

Reference DC750.2





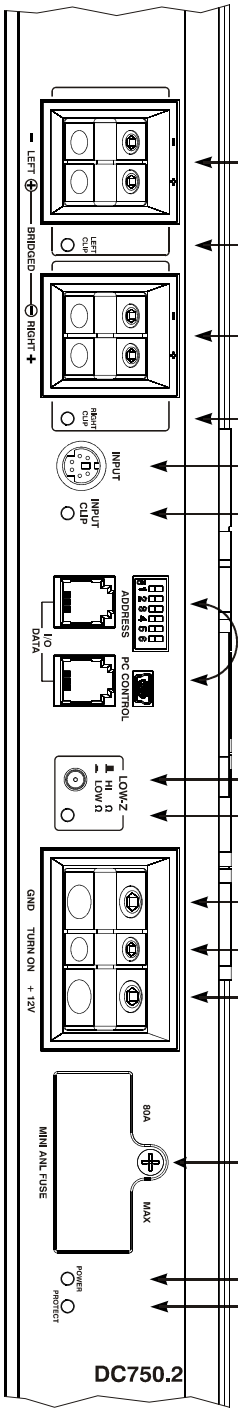
Key Features

- SymbiLink™ Balanced Inputs
- On-Board, Full Function DSP
- Intelligent Rail Voltage Control
- Plays from ½ ohm to 4 ohm Stereo Loads
- USB Input for PC Control
- Optional DRC-SL In-Dash Remote Control
- Optional Digital Programming Network
- Ducted Flow Cooling
- Heavy-Duty, High-Current, Insulated Terminal Blocks
- Space Saving Flush Wiring Connections
- Heavy-Duty Mini ANL Fuse
- Bridgeable
- Three-Channel Capable
- Gate Drive Boost Circuit
- High-Current Bipolar Outputs
- Optically Isolated MOSFET Power Supply
- Quality ZAPCO Construction

Reference DC750.2 Specifications

Total Power (14.4V @ 1kHz)	Power
Rated Power / Channel	T.H.D.+N
175watts x 2 @ 4Ω	< .04%
360 watts x 2 @ 2Ω	< .05%
Bridged Mono	
780watts x 1 @ 4 Ω Mono	< .2%
Frequency Response	20 – 20kHz, + 0 / - .5dB
S/N Ratio	> 90dB
Transient Distortion (4Ω, 40W)	< .03%
Slew Rate	40 V/µS
Damping Factor	> 1000 @ 4Ω
Input Sensitivity	
Balanced (DIN)	560mV – 10V
Separation	> 60dB
Max. Current Requirements	120 Amps @ 750 watts
Idle Current	1.56 Amps
Dimensions	24.40”L x 7.12”W x 2.35”H

Front Panel Layouts



Left Speaker Terminals

Left Ch. Clip Indicator

Right Speaker Terminals

Right Ch. Clip Indicator

SymbiLink Balanced Input

Input Clip Indicator

Zapco Digital Programming Network Ports
See page 17

Low Z Switch

Low Z Indicator

Chassis Ground: Connect the ground to the vehicles chassis near the amplifier.

Turn On +12V

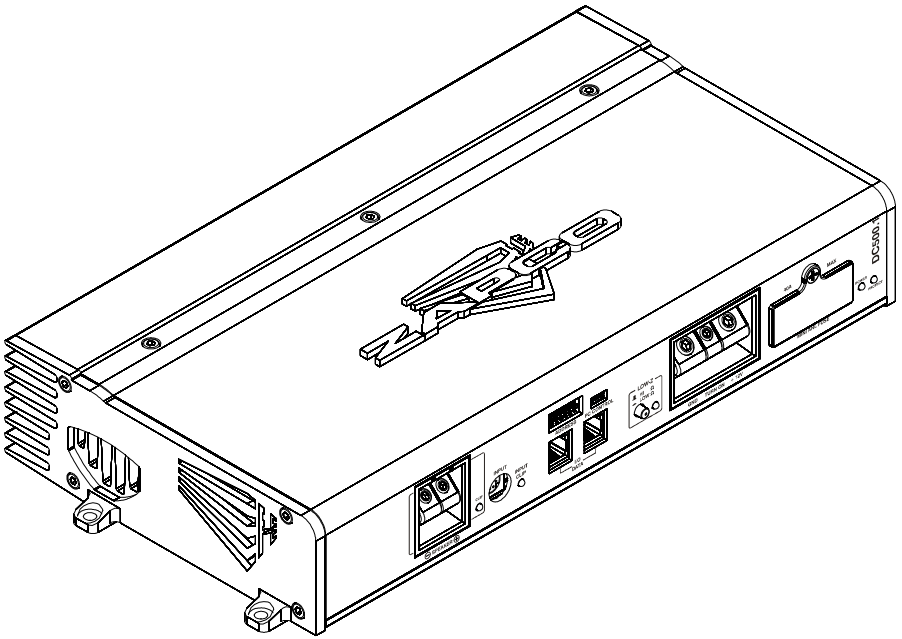
+12V Power: Connect heavy stranded wire to the 12 volt source.

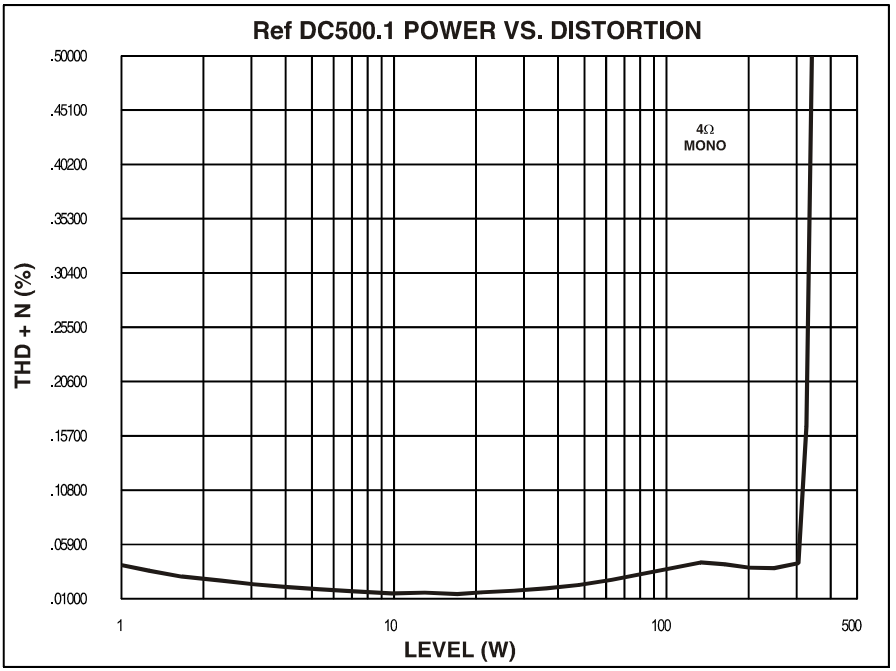
Mini ANL Fuse: Never replace fuse with a fuse greater than 80 amperes!

Power On Indicator

Protect Indicator

Reference DC500.1





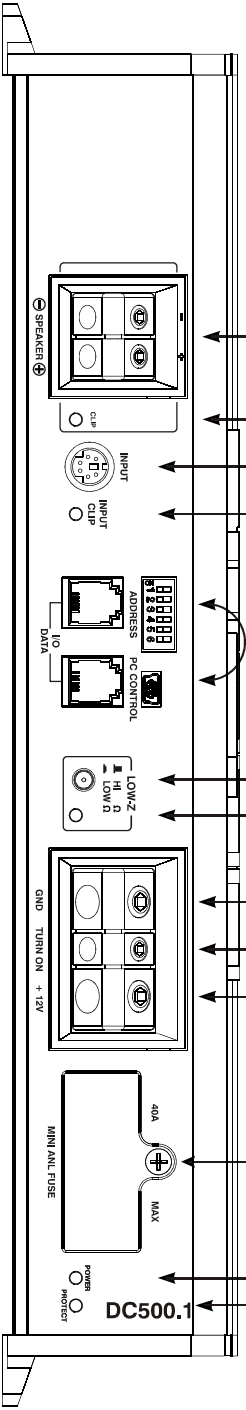
Key Features

- SymbiLink™ Balanced Inputs
- On-Board, Full Function DSP
- Intelligent Rail Voltage Control
- Plays from ½ ohm to 4 ohm Stereo Loads
- USB Input for PC Control
- Optional DRC-SL In-Dash Remote Control
- Optional Digital Programming Network
- Ducted Flow Cooling
- ZAPCO EHVC Output Circuitry
- Heavy-Duty, High-Current, Insulated Terminal Blocks
- Space Saving Flush Wiring Connections
- Heavy-Duty Mini ANL Fuse
- Gate Drive Boost Circuit
- High-Current Bipolar Outputs
- Optically Isolated MOSFET Power Supply
- Quality ZAPCO Construction

Reference DC500.1 Specifications

Total Power (14.4V @ 1kHz)	
.2% T.H.D.	500 watts
Rated Power	T.H.D.+N
350 watts x 1 @ 4Ω	< .04%
500 watts x 1@ 2Ω	< .20%
Frequency Response	20 – 20kHz, +0/-.5dB
S/N Ratio	> 80dB
Transient Distortion (4Ω, 35W)	< .013%
Slew Rate	> 25 V/μS
Damping Factor	> 250 @ 4Ω
Input Sensitivity	
Balanced (DIN)	500mV – 10V
Max. Current Requirements	40 Amps @ 500 watts
Idle Current	.65 Amps
Dimensions	14.01”L x 7.12”W x 2.35”H

Front Panel Layout



Speaker Terminals

Clip Indicator

SymbiLink Balanced Input

Input Clip Indicator

Zapco Digital Programming Network Ports
See page 17

Low Z Switch

Low Z Indicator

Chassis Ground: Connect the ground to the vehicles chassis near the amplifier.

Turn On +12V

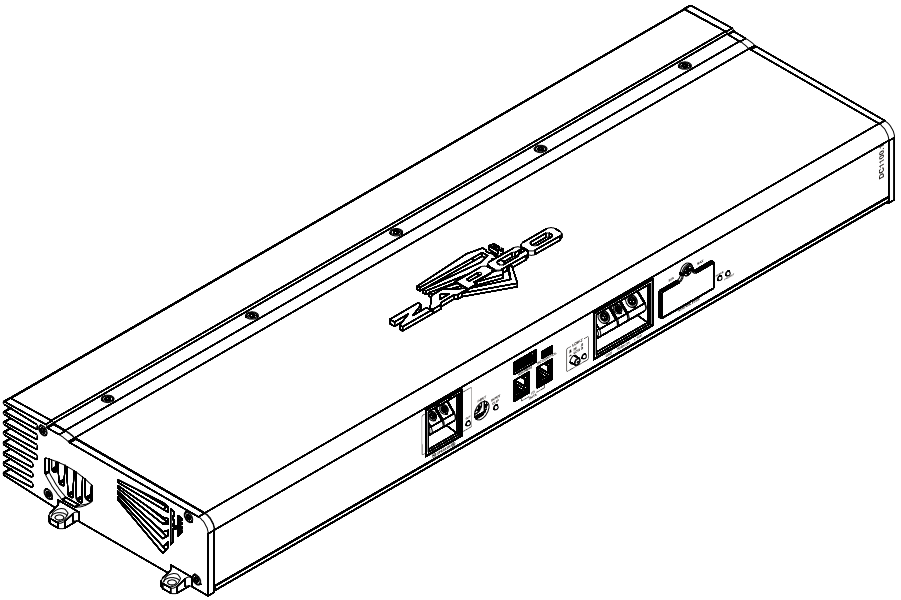
+12V Power: Connect heavy stranded wire to the 12 volt source.

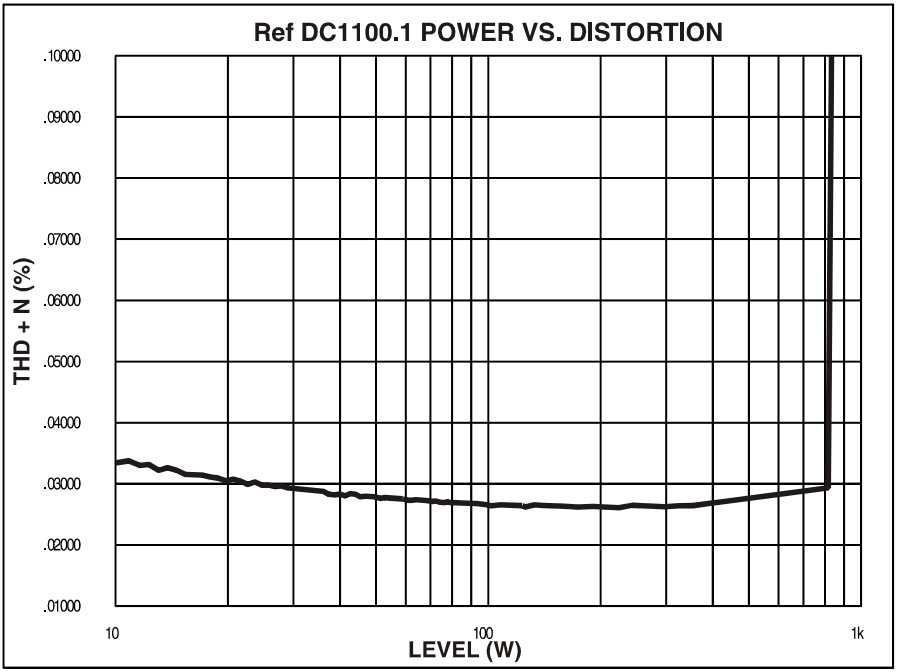
Mini ANL Fuse: Never replace fuse with a fuse greater than 40 amperes!

Power On Indicator

Protect Indicator

Reference DC1100.1





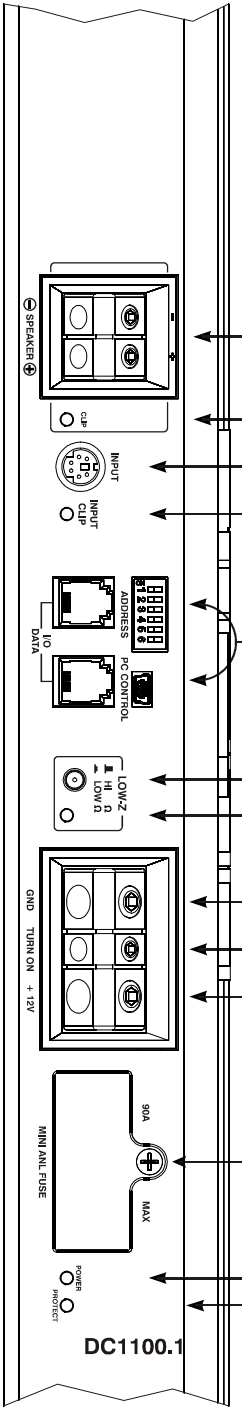
Key Features

- SymbiLink™ Balanced Inputs
- On-Board, Full Function DSP
- Intelligent Rail Voltage Control
- Plays from ½ ohm to 4 ohm Stereo Loads
- USB Input for PC Control
- Optional DRC-SL In-Dash Remote Control
- Optional Digital Programming Network
- Ducted Flow Cooling
- ZAPCO EHVC Output Circuitry
- Heavy-Duty, High-Current, Insulated Terminal Blocks
- Space Saving Flush Wiring Connections
- Heavy-Duty Mini ANL Fuse
- Gate Drive Boost Circuit
- High-Current Bipolar Outputs
- Optically Isolated MOSFET Power Supply
- Quality ZAPCO Construction

Reference DC1100.1 Specifications

Total Power (14.4V @ 1kHz)	Power
Dynamic (4Ω mono)	1450 Watts
Rated Power	T.H.D.+N
825 watts x 1@ 4Ω	< .03%
1100watts x 1 @ 2Ω	< .05%
Frequency Response	20 – 20kHz, + 0 / - .5dB
S/N Ratio	> 90dB
Transient Distortion (4Ω, 40W)	< .03%
Slew Rate	40 V/µS
Damping Factor	> 700 @ 4Ω
Input Sensitivity	
Balanced (DIN)	500mV – 10V
Max. Current Requirements	135 Amps @ 900 watts
Idle Current	1.5 Amps
Dimensions	24.40”L x 7.12”W x 2.35”H

Front Panel Layout



Speaker Terminals

Clip Indicator

SymbiLink Balanced Input

Input Clip Indicator

Zapco Digital Programming Network Ports
See page 17

Low Z Switch

Low Z Indicator

Chassis Ground: Connect the ground to the vehicles chassis near the amplifier.

Turn On +12V

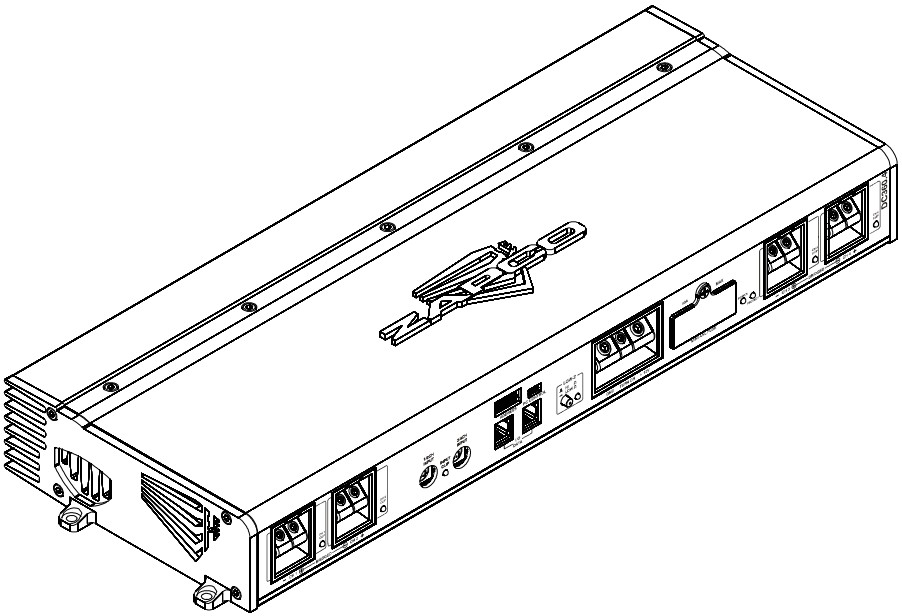
+12V Power: Connect heavy stranded wire to the 12 volt source.

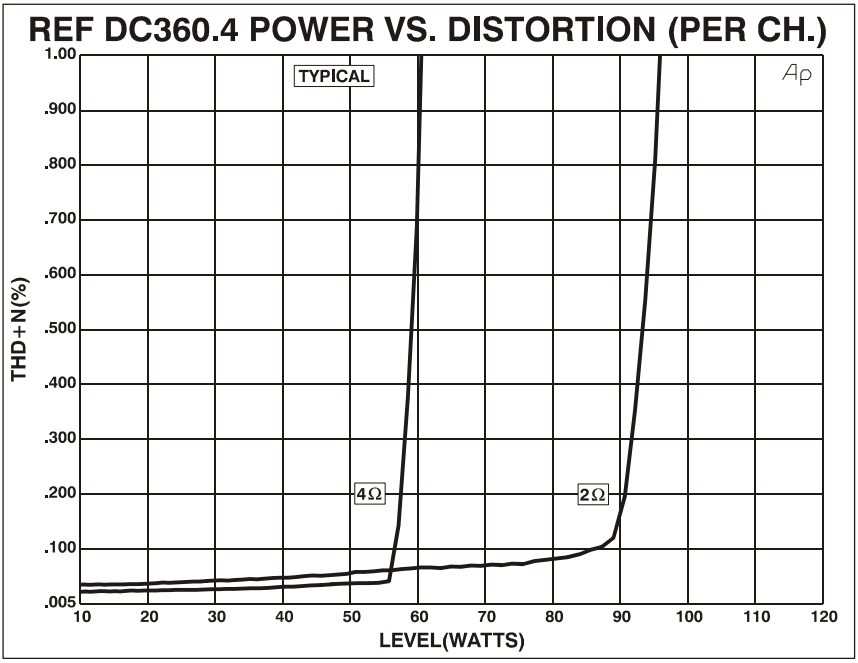
Mini ANL Fuse: Never replace fuse with a fuse greater than 90 amperes!

Power On Indicator

Protect Indicator

Reference DC360.4





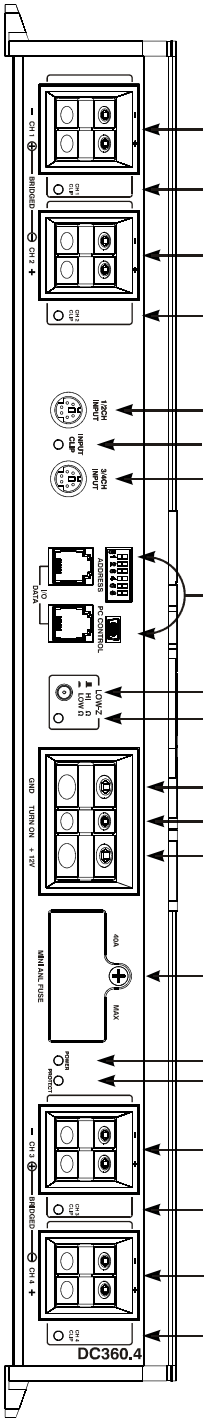
Key Features

- SymbiLink™ Balanced Inputs
- On-Board, Full Function DSP
- Intelligent Rail Voltage Control
- Plays from ½ ohm to 4 ohm Stereo Loads
- USB Input for PC Control
- Optional DRC-SL In-Dash Remote Control
- Optional Digital Programming Network
- Ducted Flow Cooling
- Heavy-Duty, High-Current, Insulated Terminal Blocks
- Space Saving Flush Wiring Connections
- Heavy-Duty Mini ANL Fuse
- Bridgeable
- Three-Channel Capable
- Gate Drive Boost Circuit
- High-Current Bipolar Outputs
- Optically Isolated MOSFET Power Supply
- Quality ZAPCO Construction

Reference DC360.4 Specifications

Total Power (14.4V @ 1kHz)	Power
Dynamic (4Ω mono)	395 watts
.2% T.H.D.	365 watts
Rated Power / Channel	T.H.D.+N
50 watts x 4 @ 4Ω	< .046%
90 watts x 4 @ 2Ω	< .13%
Bridged Mono	
110 watts x 2 @ 8Ω	< .05%
180 watts x 2 @ 4Ω	< .1%
Frequency Response	20 – 20kHz, ± .12dB
S/N Ratio	> 95dB
Transient Distortion (4Ω, 40W)	< .01%
Slew Rate	> 23 V/μS
Damping Factor	> 160 @ 4Ω
Input Sensitivity	
Balanced (DIN)	500mV – 10V
Separation	> 55Db Front, 58dB Rear
Max. Current Requirements	45 Amps @ 365 watts
Idle Current	1.1 Amps
Dimensions	19.40”L x 7.12”W x 2.35”H

Front Panel Layout



Channel 1 Speaker Terminals

Channel 1 Clip Indicator

Channel 2 Speaker Terminals

Channel 2 Clip Indicator

Channels 1 and 2 SymbiLink Balanced Input

Input Clip Indicator

Channels 3 and 4 SymbiLink Balanced Input

Zapco Digital Programming Network Ports
See page 17

Low Z Switch

Low Z Indicator

Chassis Ground: Connect the ground to the vehicles chassis near the amplifier.

Turn On +12V

+12V Power: Connect heavy stranded wire to the 12 volt source.

Mini ANL Fuse: Never replace fuse with a fuse greater than 40 amperes!

Power On Indicator

Protect Indicator

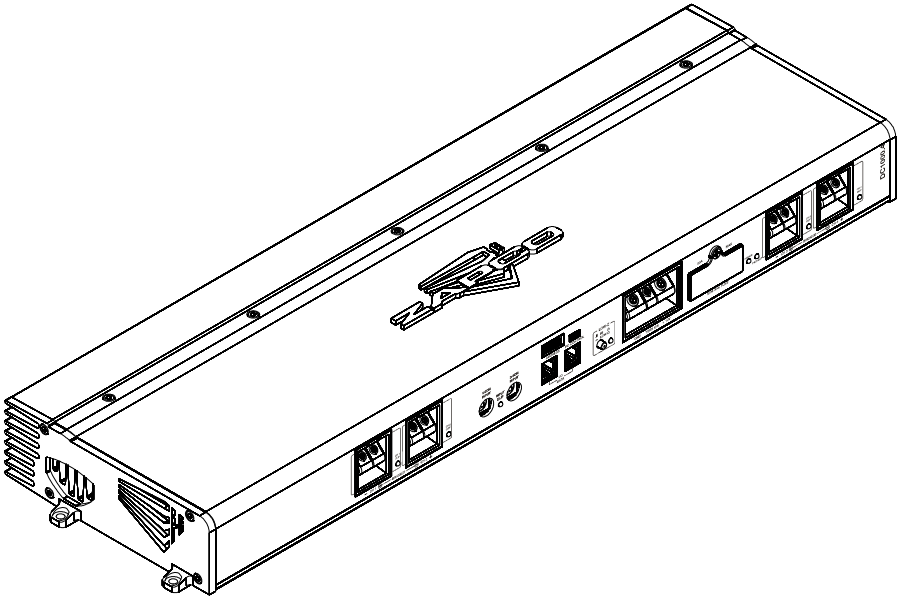
Channel 3 Speaker Terminals

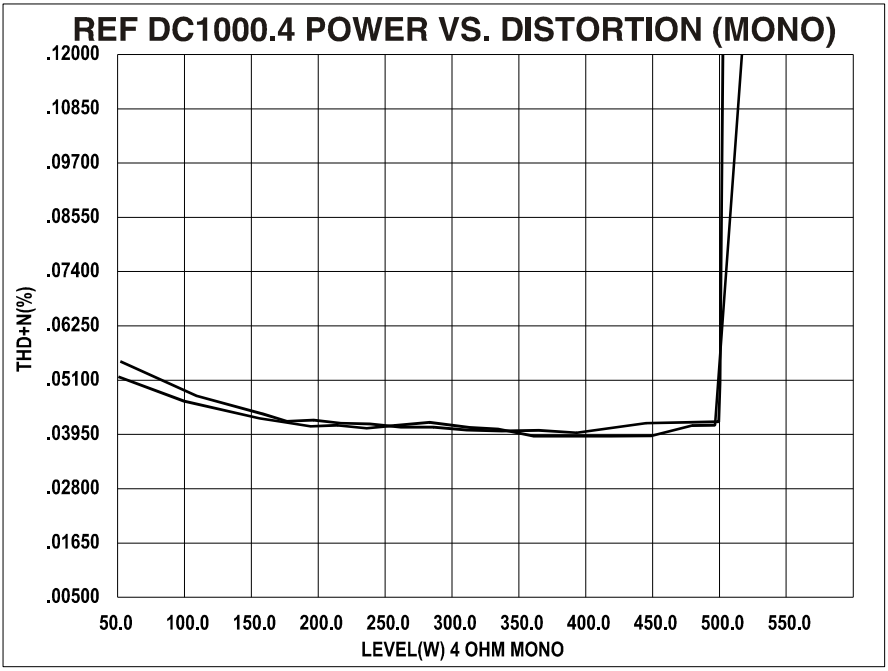
Channel 3 Clip Indicator

Channel 4 Speaker Terminals

Channel 4 Clip Indicator

Reference DC1000.4





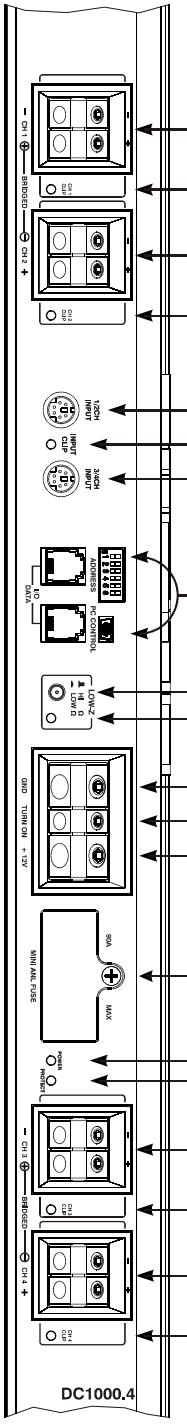
Key Features

- SymbiLink™ Balanced Inputs
- On-Board, Full Function DSP
- Intelligent Rail Voltage Control
- Plays from ½ ohm to 4 ohm Stereo Loads
- USB Input for PC Control
- Optional DRC-SL In-Dash Remote Control
- Optional Digital Programming Network
- Ducted Flow Cooling
- ZAPCO EHVC Output Circuitry
- Heavy-Duty, High-Current, Insulated Terminal Blocks
- Space Saving Flush Wiring Connections
- Heavy-Duty Mini ANL Fuse
- Bridgeable
- Three-Channel Capable
- Gate Drive Boost Circuit
- High-Current Bipolar Outputs
- Optically Isolated MOSFET Power Supply
- Quality ZAPCO Construction

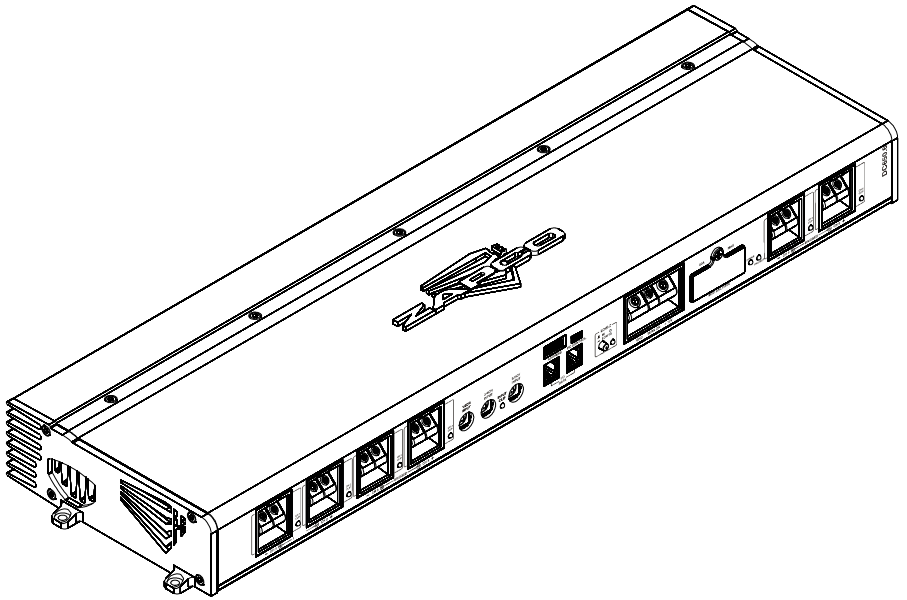
Reference DC1000.4 Specifications

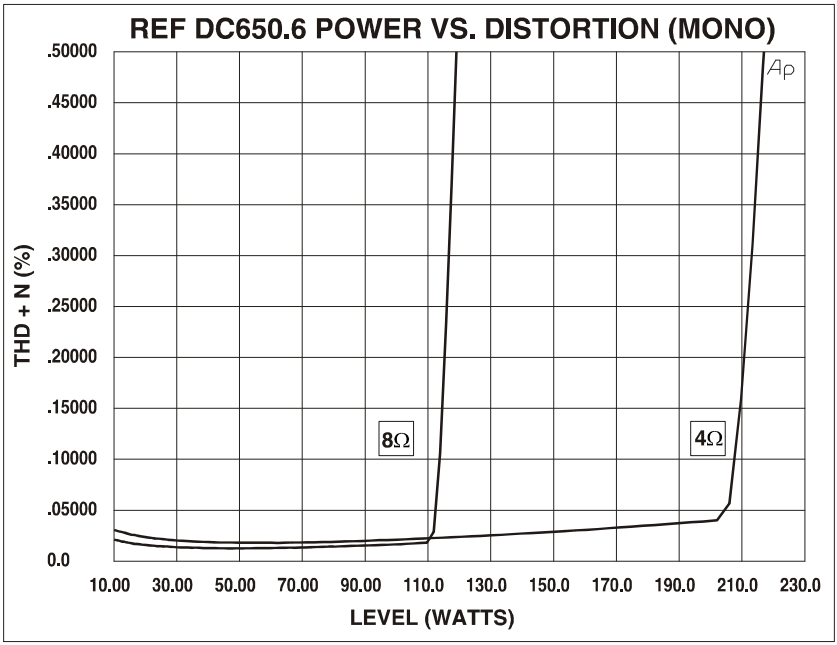
Total Power (14.4V @ 1kHz)	Power
Dynamic (4Ω mono)	1200 watts
Rated Power / Channel	T.H.D.+N
150 watts x 4 @ 4Ω	< .04%
250 watts x 4 @ 2Ω	< .05%
Bridged to Dual Mono	
500 watts x 2 @ 4Ω	< .04%
Frequency Response	20 – 20kHz, + 0 / - .5dB
S/N Ratio	> 90dB
Transient Distortion (4Ω, 40W)	< .03%
Slew Rate	> 36 V/μS
Damping Factor	> 300 @ 4Ω
Input Sensitivity	
Balanced (DIN)	560mV – 10V
Separation	> 60dB
Max. Current Requirements	120 Amps @ 1000 watts
Idle Current	1.56 Amps
Dimensions	24.40”L x 7.12”W x 2.35”H

Front Panel Layout


Channel 1 Speaker Terminals
Channel 1 Clip Indicator
Channel 2 Speaker Terminals
Channel 2 Clip Indicator
Channels 1 and 2 SymbiLink Balanced Input
Input Clip Indicator
Channels 3 and 4 SymbiLink Balanced Input
Zapco Digital Programming Network Ports
See page 17
Low Z Switch
Low Z Indicator
Chassis Ground: Connect the ground to the vehicles chassis near the amplifier.
Turn On +12V
+12V Power: Connect heavy stranded wire to the 12 volt source.
Mini ANL Fuse: Never replace fuse with a fuse greater than 90 amperes!
Power On Indicator
Protect Indicator
Channel 3 Speaker Terminals
Channel 3 Clip Indicator
Channel 4 Speaker Terminals
Channel 4 Clip Indicator
DC1000.4

Reference DC650.6





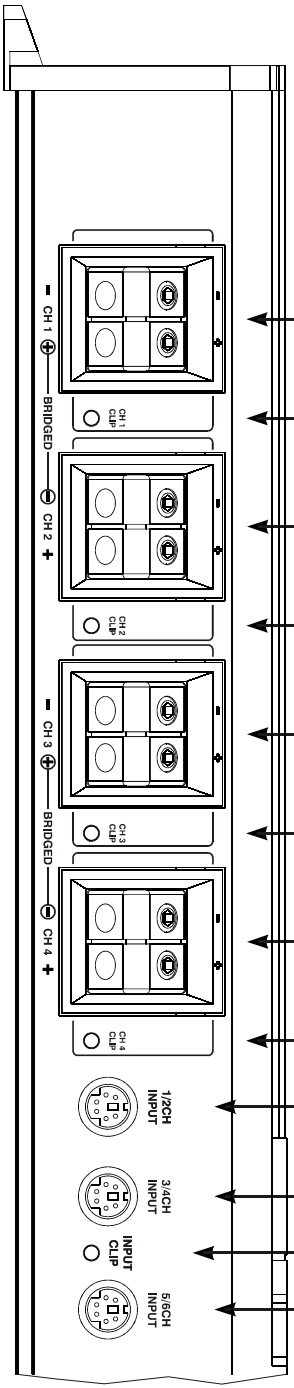
Key Features

- SymbiLink™ Balanced Inputs
- On-Board, Full Function DSP
- Intelligent Rail Voltage Control
- Plays from ½ ohm to 4 ohm Stereo Loads
- USB Input for PC Control
- Optional DRC-SL In-Dash Remote Control
- Optional Digital Programming Network
- Ducted Flow Cooling
- Heavy-Duty, High-Current, Insulated Terminal Blocks
- Space Saving Flush Wiring Connections
- Heavy-Duty Mini ANL Fuse
- Bridgeable
- Three-Channel Capable
- Gate Drive Boost Circuit
- High-Current Bipolar Outputs
- Optically Isolated MOSFET Power Supply
- Quality ZAPCO Construction

Reference DC650.6 Specifications

Total Power (14.4V @ 1kHz)	Power
Dynamic (4Ω mono)	540 watts
Rated Power / Channel	T.H.D.+N
50 watts x 4 + 100 watts x 2 @ 4Ω	< .05%
90 watts x 4 + 180 watts x 2 @ 2Ω	.2%
Max Power	
110 watts x 4 @ 2Ω 500 watts x 1 @ 2Ω mono	
Frequency Response	20 – 20kHz, + 0 / - .5dB
S/N Ratio	> 95dB
Transient Distortion (4Ω, 40W)	< .02%
Slew Rate	> 23 V/µS
Damping Factor	> 160 @ 4Ω
Input Sensitivity	
Balanced (DIN)	500mV – 10V
Separation	> 60dB
Max. Current Requirements	80 Amps @ 540 watts
Idle Current	1.72 Amps
Dimensions	24.40”L x 7.12”W x 2.35”H

Front Panel Layout



Channel 1 Speaker Terminals

Channel 1 Clip Indicator

Channel 2 Speaker Terminals

Channel 2 Clip Indicator

Channel 3 Speaker Terminals

Channel 3 Clip Indicator

Channel 4 Speaker Terminals

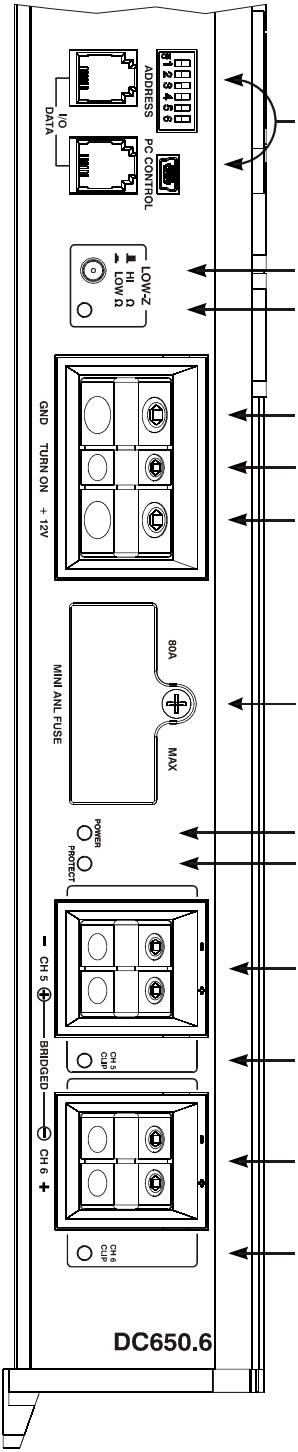
Channel 4 Clip Indicator

Channels 1 and 2 SymbiLink Balanced Input

Channels 3 and 4 SymbiLink Balanced Input

Input Clip Indicator

Channels 5 and 6 SymbiLink Balanced Input



Zapco Digital Programming Network Ports
See page 17

Low Z Switch

Low Z Indicator

Chassis Ground: Connect the ground to the vehicles chassis near the amplifier.

Turn On +12V

+12V Power: Connect heavy stranded wire to the 12 volt source.

Mini ANL Fuse: Never replace fuse with a fuse greater than 80 amperes!

Power On Indicator

Protect Indicator

Channel 5 Speaker Terminals

Channel 5 Clip Indicator

Channel 6 Speaker Terminals

Channel 6 Clip Indicator

System Diagrams

2-Channel Amp Systems **Page 53 - 56**

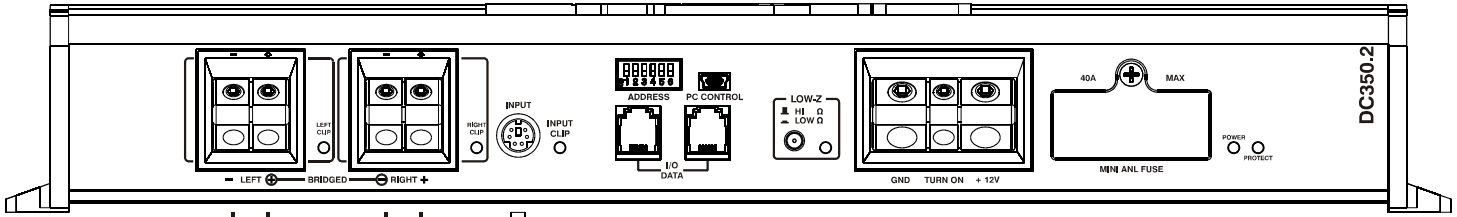
4-Channel Amp Systems **Page 57 - 60**

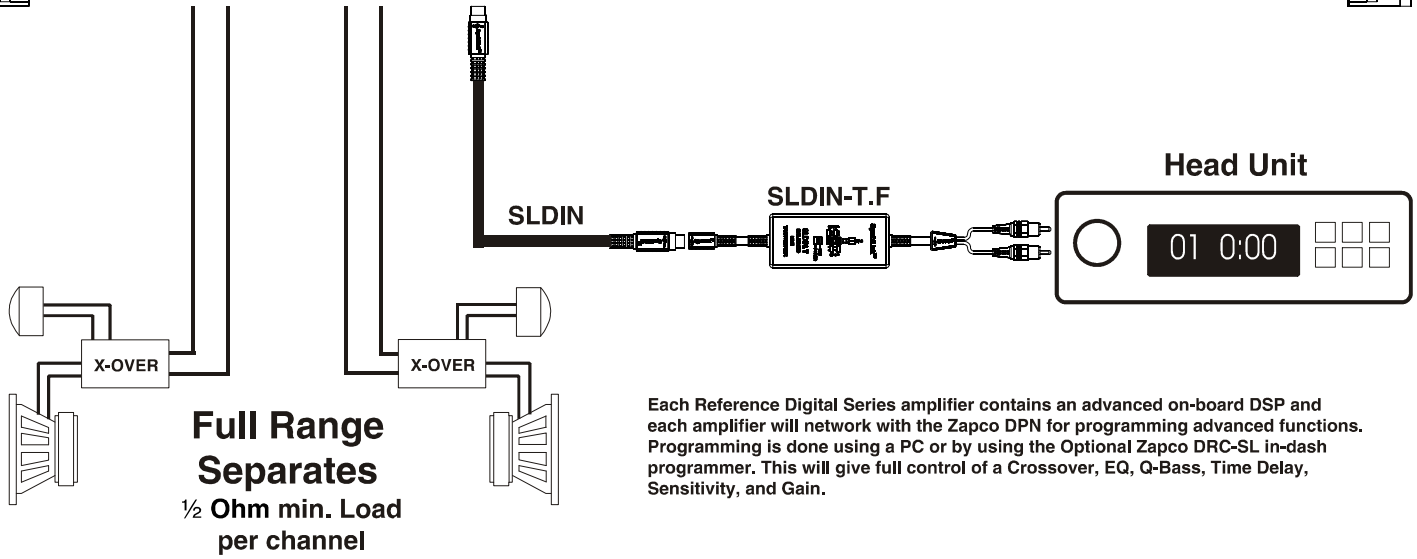
6-Channel Amp Systems **Page 61 - 63**

Multi-Amp Systems **Page 64 - 67**

Basic Full Range System for Ref DC200/DC350/DC750

Ref DC350 Pictured

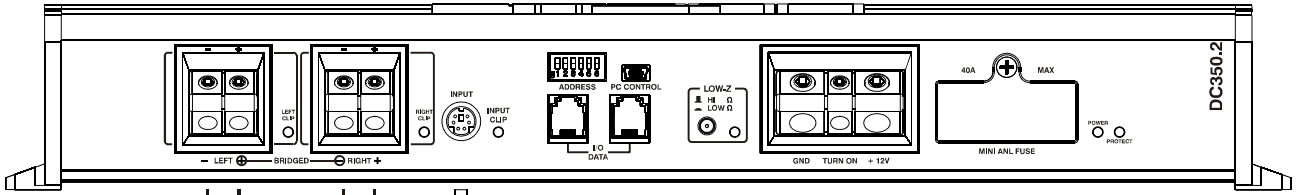




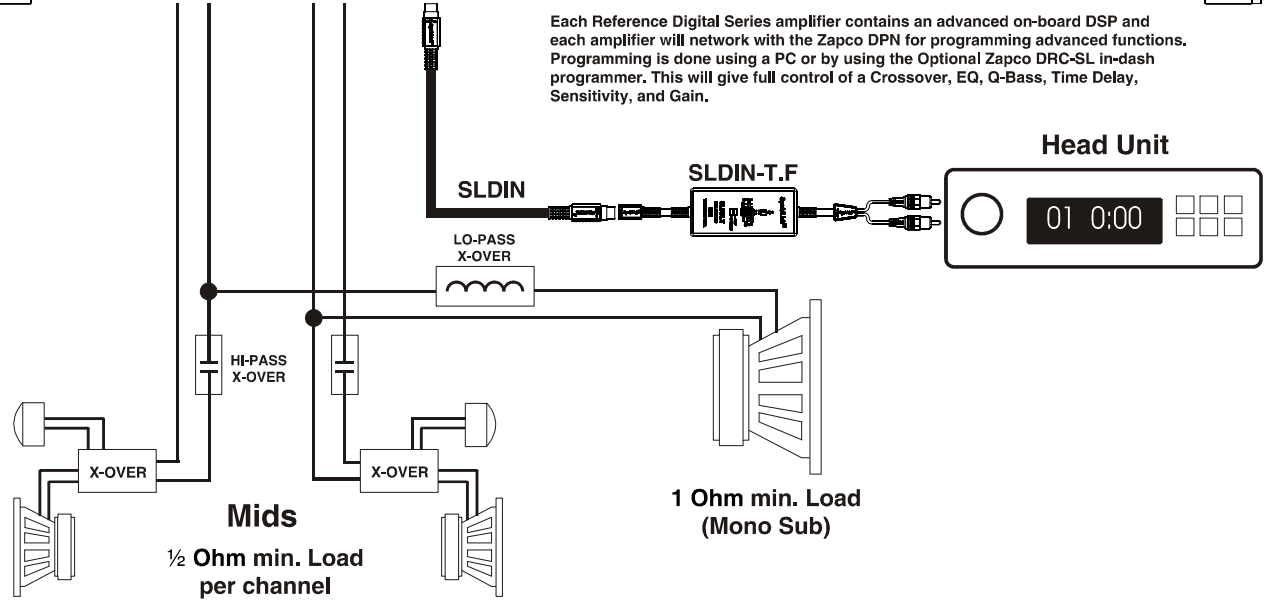
Each Reference Digital Series amplifier contains an advanced on-board DSP and each amplifier will network with the Zapco DPN for programming advanced functions. Programming is done using a PC or by using the Optional Zapco DRC-SL in-dash programmer. This will give full control of a Crossover, EQ, Q-Bass, Time Delay, Sensitivity, and Gain.

Basic 3 Channel System w/ Subwoofer for Ref DC200/DC350/DC750

Reference DC350 Pictured

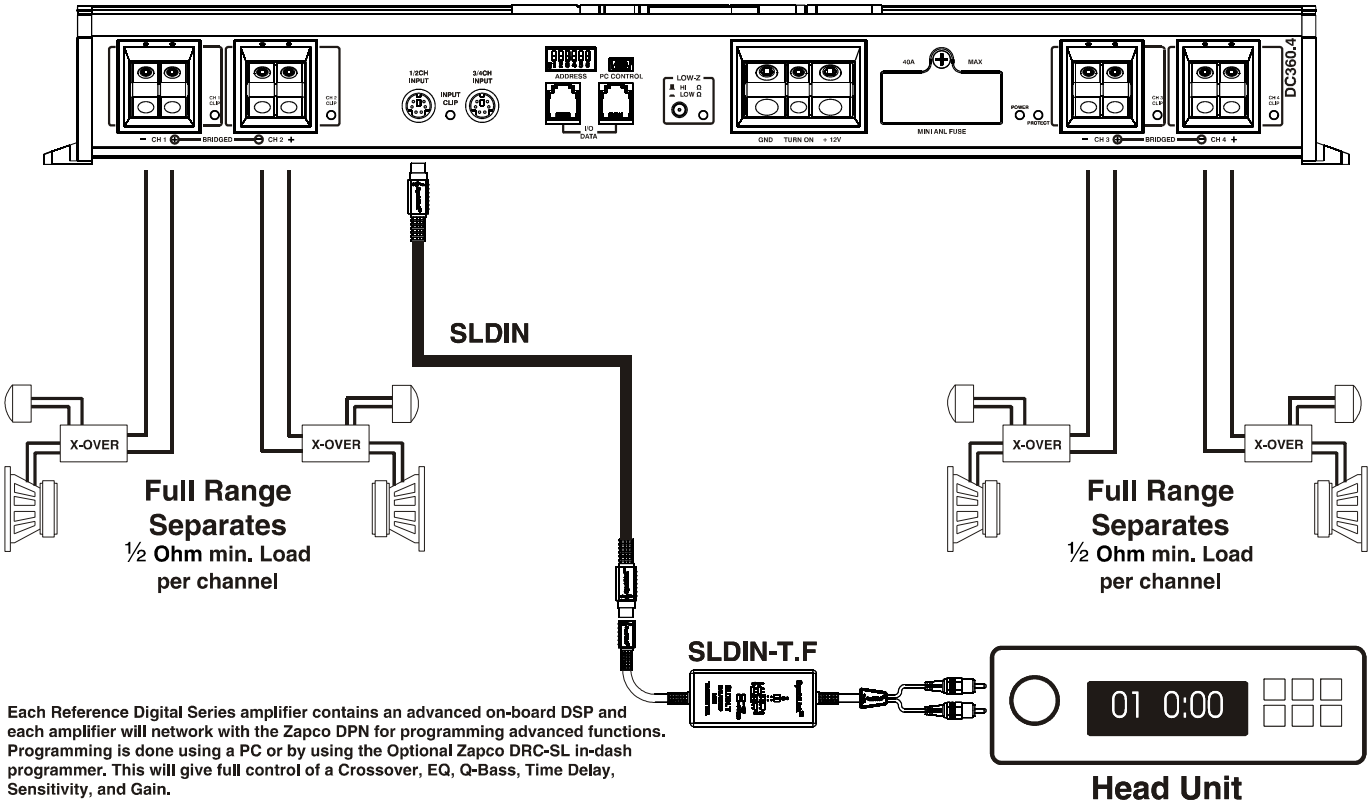


Each Reference Digital Series amplifier contains an advanced on-board DSP and each amplifier will network with the Zapco DPN for programming advanced functions. Programming is done using a PC or by using the Optional Zapco DRC-SL in-dash programmer. This will give full control of a Crossover, EQ, Q-Bass, Time Delay, Sensitivity, and Gain.



Ref DC360/DC1000 Basic 4 Channel No Fade

Ref DC360 Pictured



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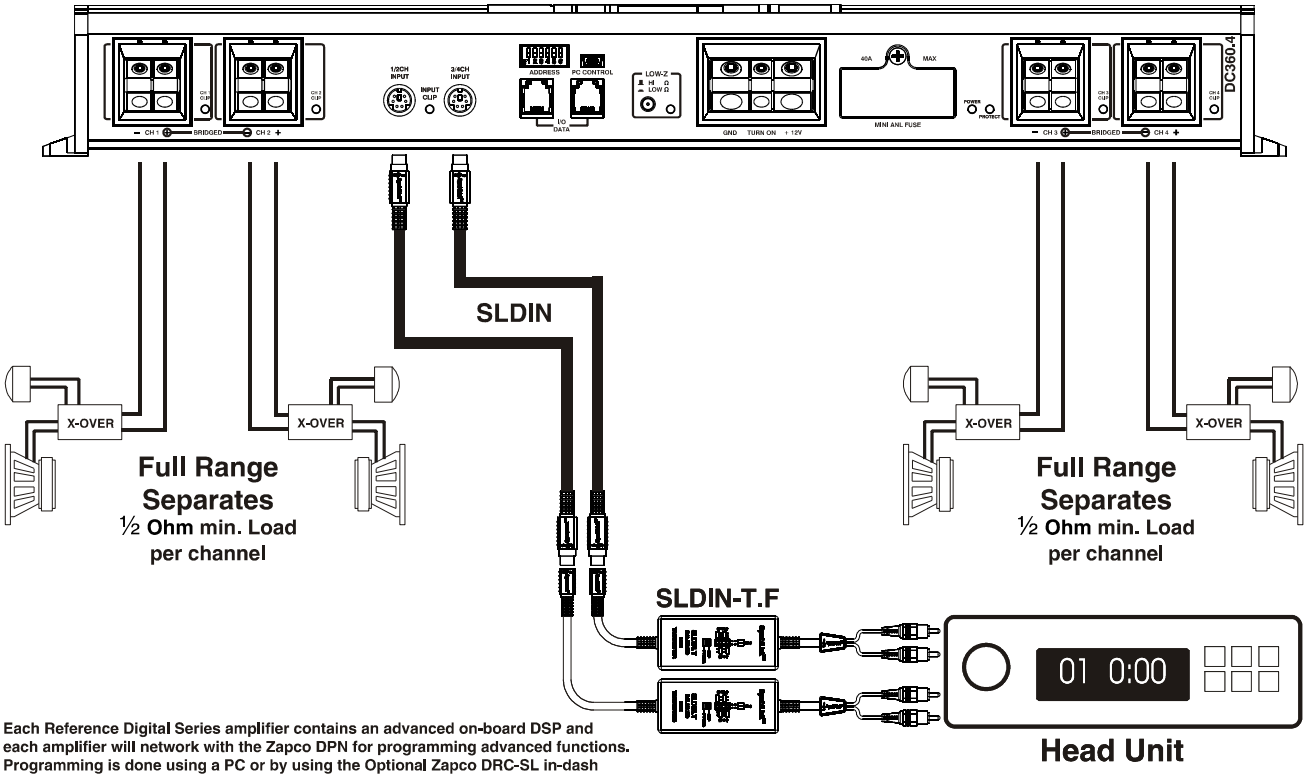
Ref DC360/DC1000 Basic 4 Channel With Fade

Ref DC360 Pictured



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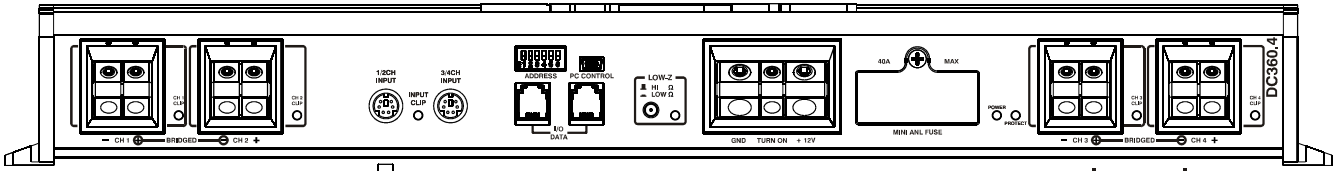
Ref DC360/DC1000 Basic 3 Channel W/ Mono Bass

Ref DC360 Pictured



SLDIN

X-OVER

X-OVER

Full Range Separates

½ Ohm min. Load per channel

Woofer

1 Ohm min. Load

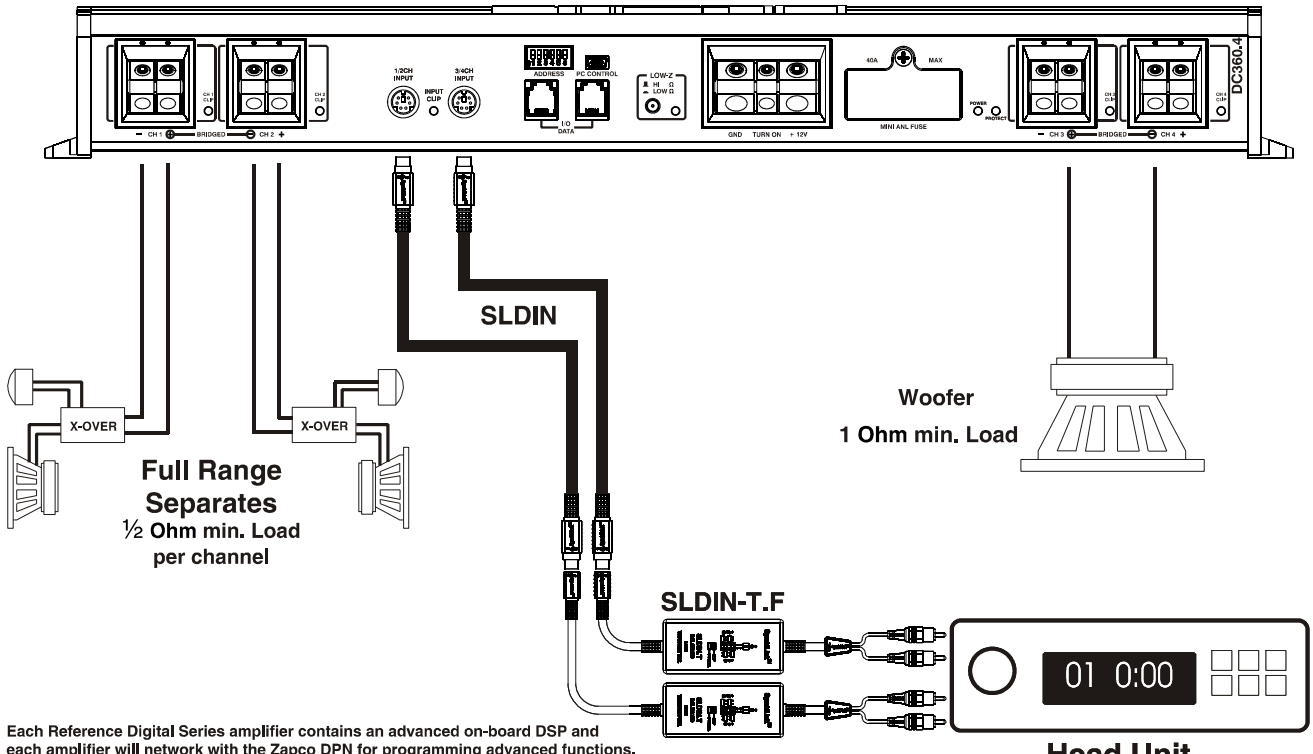
Each Reference Digital Series amplifier contains an advanced on-board DSP and each amplifier will network with the Zapco DPN for programming advanced functions. Programming is done using a PC or by using the Optional Zapco DRC-SL in-dash programmer. This will give full control of a Crossover, EQ, Q-Bass, Time Delay, Sensitivity, and Gain.

SLDIN-T.F

Head Unit

Ref DC360/DC1000 3 Channel With Fading Bass

Ref DC360 Pictured



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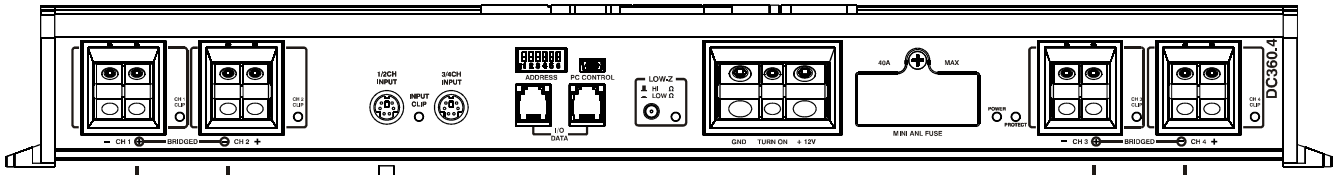
Ref DC360/DC1000 180 Watts/ Channel Dual Mono (Stereo) Amp

Ref DC360 Pictured



SLDIN

X-OVER

Full Range Separates

1 Ohm min. Load per channel

X-OVER

Full Range Separates

1 Ohm min. Load per channel

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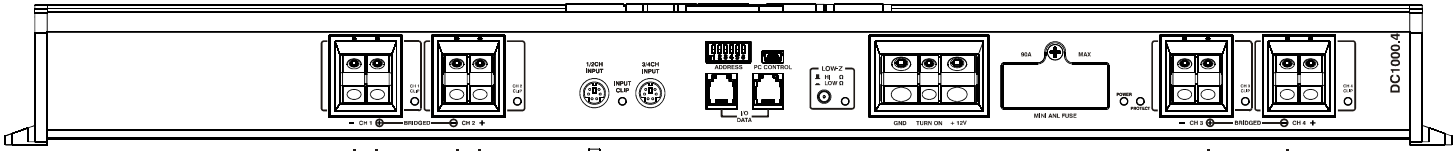
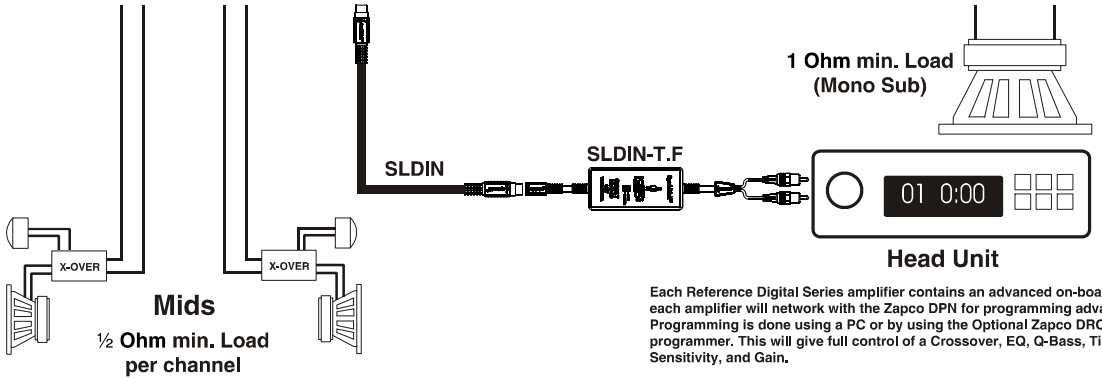
SLDIN-T.F

Head Unit

3 Channel w/ Subwoofer

Reference DC1000 Pictured





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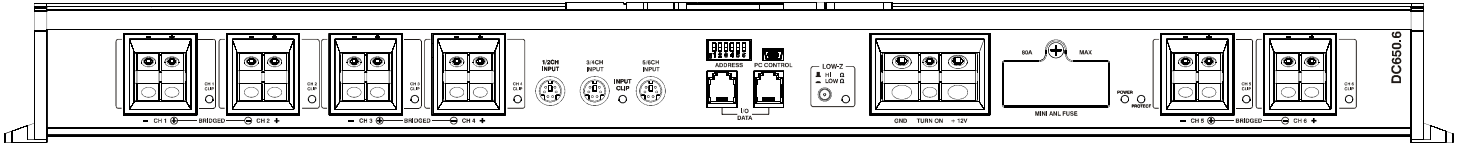
Three way with Bandpass

Ref DC650 Pictured



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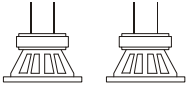
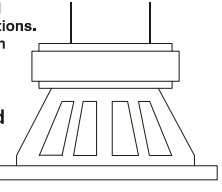
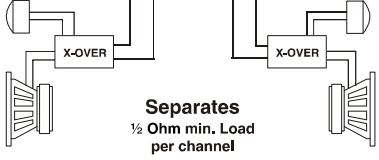


Mid Bass
½ ohm min. Load per channel



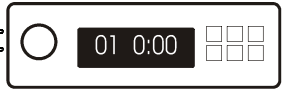
1 Ohm min. Load (Mono Sub)



Separates
½ Ohm min. Load per channel

SLDIN

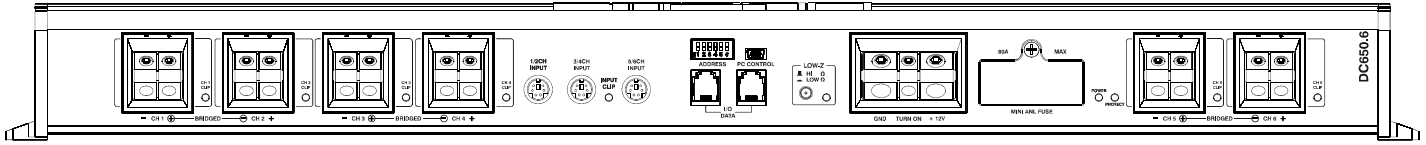
SLDIN-T.F

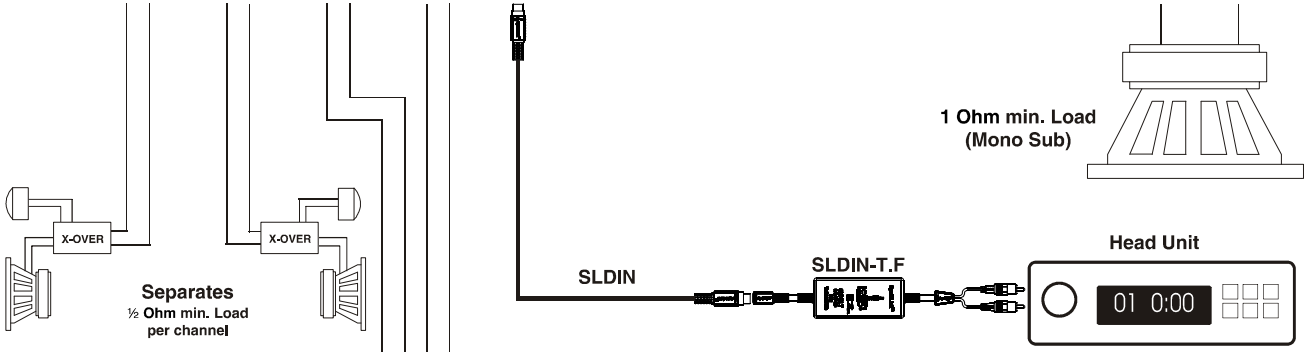


Head Unit

4 Channel + Bass

Ref DC650 Pictured





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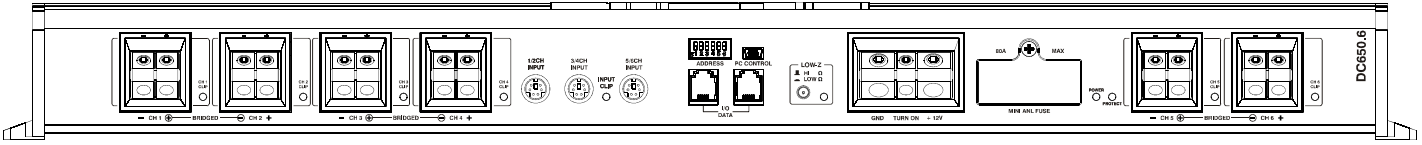
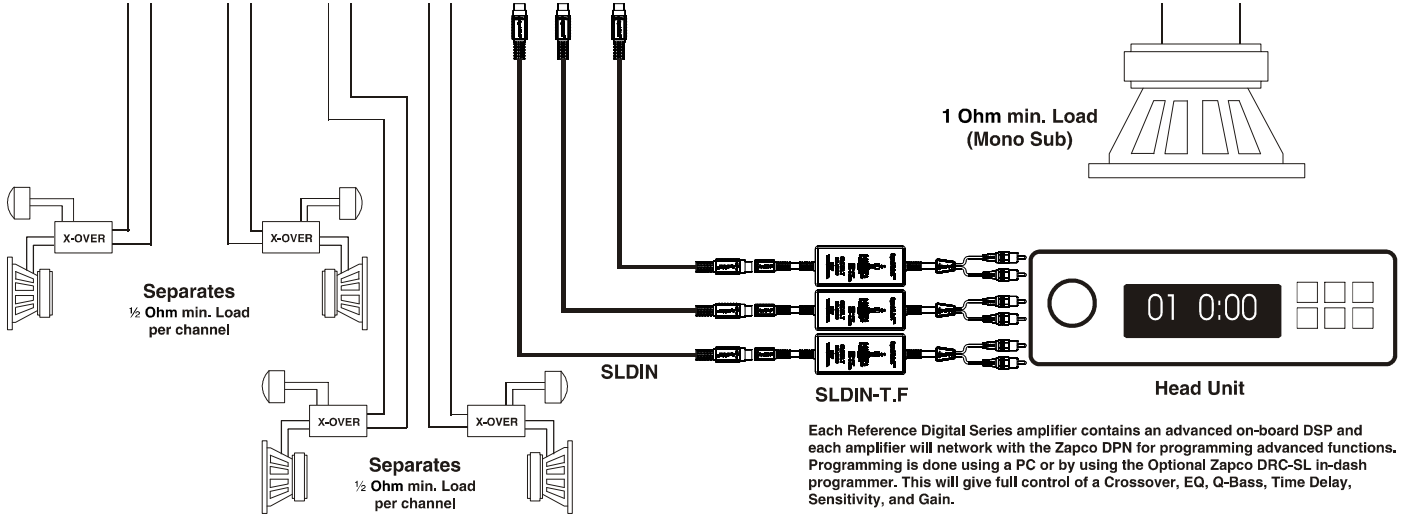
4 Channel + Bass w/ Fade

Ref DC650 Pictured





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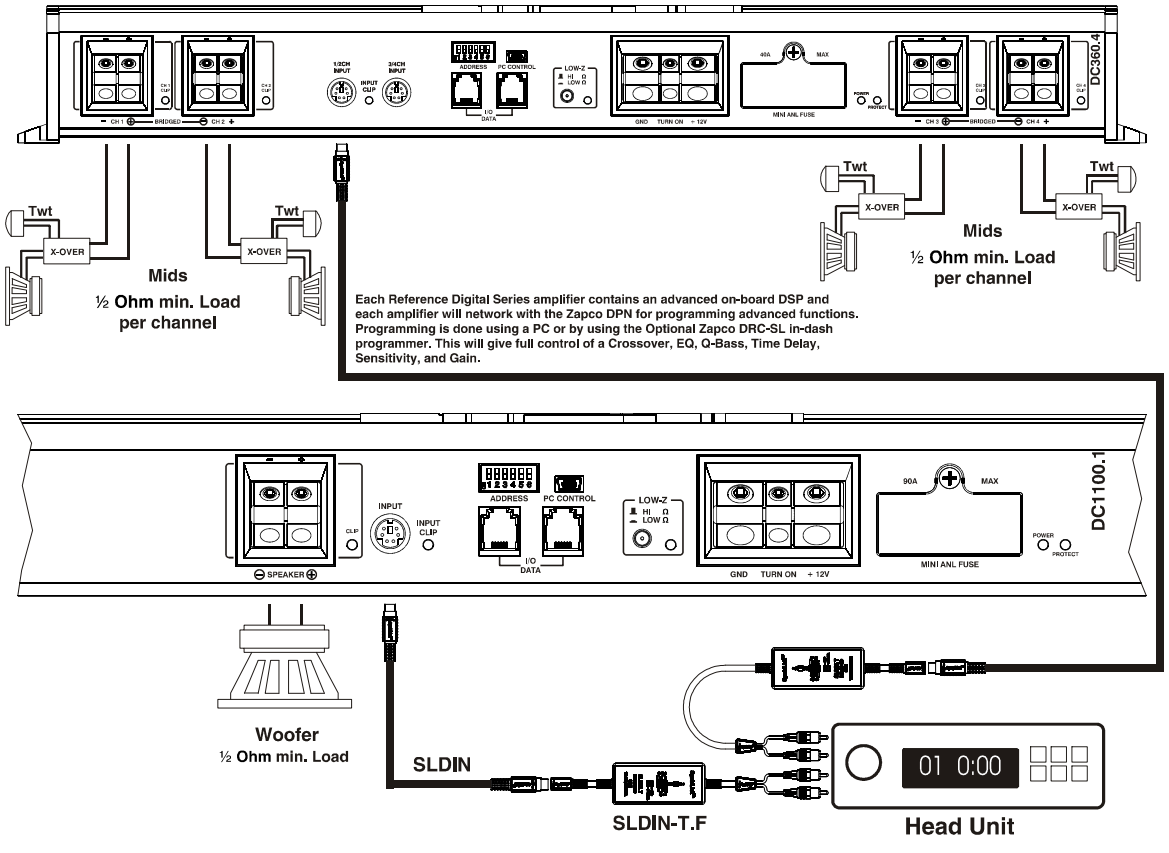
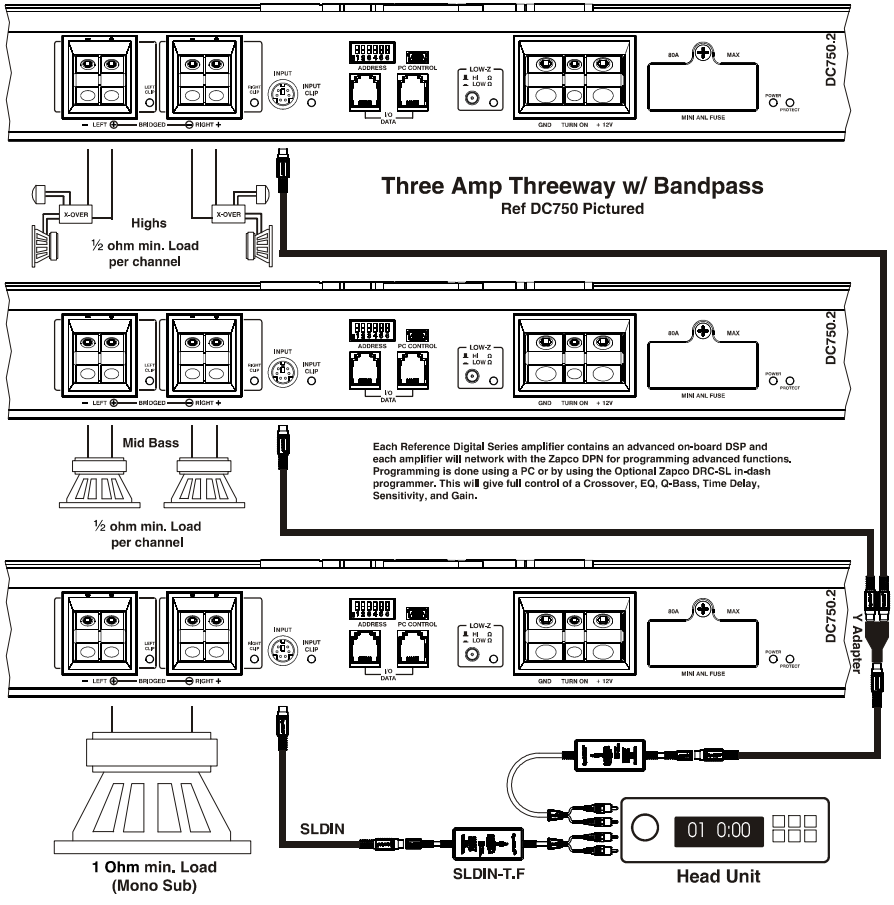
Four Channel Front and Rear W/ Mono Sub

Ref DC360 and DC1100 Pictured




DC750.2
Three Amp Threeway w/ Bandpass
Ref DC750 Pictured
X-OVER
Highs
½ ohm min. Load
per channel
Mid Bass
½ ohm min. Load
per channel
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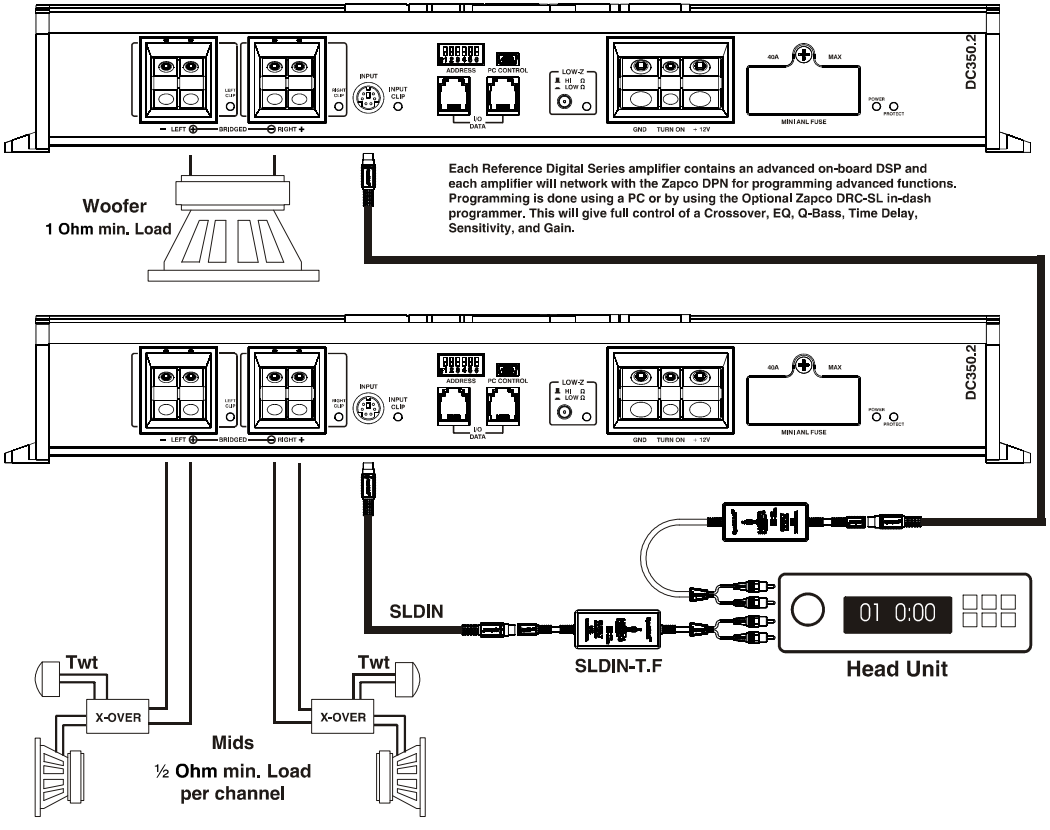
Y Adapter
SLDIN
SLDIN-T.F
Head Unit
1 Ohm min. Load
(Mono Sub)

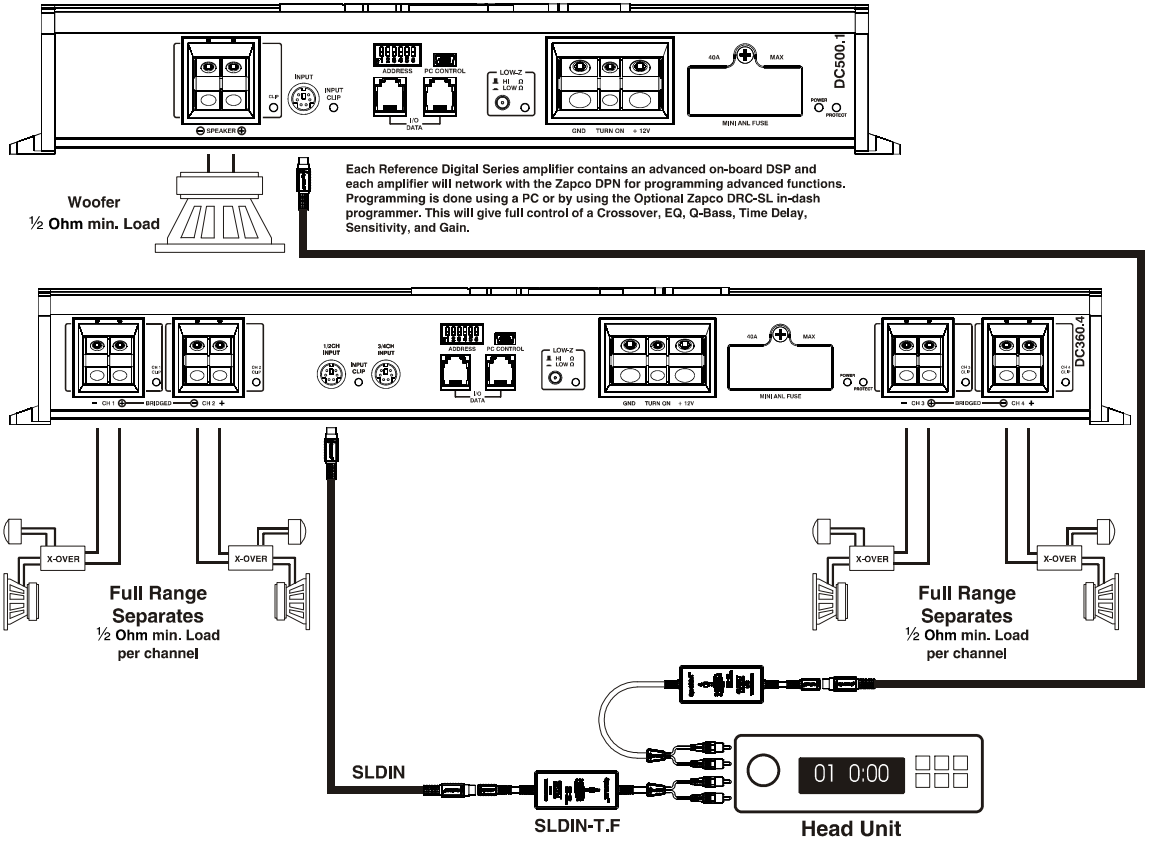
Basic Bi-Amp System for Ref DC200/DC350/DC750

Reference DC350 Pictured


DC350.2
Each Reference Digital Series amplifier contains an advanced on-board DSP and each amplifier will network with the Zapco DPN for programming advanced functions. Programming is done using a PC or by using the Optional Zapco DRC-SL in-dash programmer. This will give full control of a Crossover, EQ, Q-Bass, Time Delay, Sensitivity, and Gain.
Woofer
1 Ohm min. Load
DC350.2
SLDIN
SLDIN-T.F
01 0:00
Head Unit
Twt
X-OVER
Twt
X-OVER
Mids
½ Ohm min. Load
per channel

Ref 4 Channel Amp + Mono Bass Amp

Ref DC500 and DC360 Pictured


DC500.1
DC360.4
Woofer
½ Ohm min. Load
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X-OVER
X-OVER
Full Range Separates
½ Ohm min. Load per channel
X-OVER
X-OVER
Full Range Separates
½ Ohm min. Load per channel
SLDIN
SLDIN-T.F
01 0:00
Head Unit

Technical Assistance

Should you experience a problem with your Reference Digital Series amplifier, please contact the dealer that sold you this product. If your dealer is unable to solve your problem, you may contact the factory service department directly.

Phone: (209) 577-4268 Monday - Friday, 8AM - 5PM Pacific Standard Time
FAX: (209) 577-8548

Also, check our web page, www.zapco.com, for tips. You can also e-mail for technical help directly from our web page.

If you need to return this product for repair, please call the factory for a Return Materials Authorization (RMA) number. We will ask you for information that will include your name, return shipping address, daytime phone number, model and serial number, and a detailed description of your problem. A photocopy of your original purchase receipt is necessary to determine warranty status and should also be included. Once we issue you an RMA, please write it in a highly visible area on the package. ZAPCO will not accept any packages that do not have a valid RMA number clearly marked on the outside of the package.

Once you have a valid RMA number, send all repairs to:

A.R.P.A. of America Corp.
D.b.a. Zapco
Attn.: Service Department
413 S. Riverside Drive
Suite D
Modesto, California, 95354